

ALGEBRA – MODEL No

1

[Q1] Choose the correct answer:

(1) If $x^2 - y^2 = 24$, $x + y = 8$, then $x - y = \dots$

- a) 3 b) 4 c) 18 d) 30

(2) If $(x - y)^0 = 1$, then $x \in \dots$

- a) $R - \{5\}$ b) $R - \{-5\}$ c) $\{5\}$ d) R

(3) The solution set of: $x^2 = 4x$ is where $x \in Q$

- a) $\{4\}$ b) $\{0\}$ c) $\{0, 4\}$ d) ϕ

(4) The probability of sure event =

- a) 0 b) 1 c) -1 d) $\frac{1}{2}$

(5) If $x^3 - a = (x - 4)(x^2 + 4x + 16)$, then $a = \dots$

- a) 4 b) 8 c) 16 d) 64

(6) $4^3 + 4^3 + 4^3 + 4^3 = \dots$

- a) 4^3 b) 4^4 c) 4^{12} d) 4^{81}

[Q2] Complete each of the following:

1) If: $x^2 + 10x + k$ is perfect square then $k = \dots$

2) If $x^3 y^{-3} = 8$, then $\frac{x}{y} = \dots$

3) If $2^y \times 5^y = 100$, then $y = \dots$

4) If: $a - b = 7$, $a^2 + ab + b^2 = 9$, then $3a^3 - 3b^3 = \dots$

5) If $2^x = 3$, then $8^x = \dots$

[Q3] factorize completely each of the following :

① $5x^2 - 25$

② $x^2 - 3x - 28$

③ $8 - x^3$

④ $4x^2 - 12x + 9$

[Q4]

A) Find the perimeter of rectangle its area is 40cm^2 and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

$2^{x-5} = 3^{2x-10}$ $(x+1)^5 = 32$

[Q5]


A) find in the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the result when $x = 1$

B) A box contains 30 cards numbered from 1 to 30 . a card is drawn randomly. Calculate the probability of drawing card carrying :

① an odd

② A number divisible by 5

③ A number is perfect square


End of the questions

ALGEBRA – MODEL No 2

[Q1] Choose the correct answer:

- (1) If $x - y = 2$, $x + y = 7$, then $x^2 - y^2 = \dots\dots\dots$
a) 9 b) 14 c) 28 d) 98
- (2) If: $9x^2 - kx + 4$ is perfect square then $k = \dots\dots\dots$
a) 6 b) 12 c) 36 d) 72
- (3) If $6^x = 11$, then $6^{x+1} = \dots\dots\dots$
a) 12 b) 22 c) 66 d) 72
- (4) The solution set of: $x^2 + 1 = 0$ in R is $\dots\dots\dots$
a) $\{1\}$ b) $\{-1\}$ c) $\{1, -1\}$ d) ϕ
- (5) If $(2x + 1)$ is factor of $2x^2 + 3x + 1$, then the other factor is ...
a) $2x - 1$ b) $x - 1$ c) $x + 1$ d) $x + 2$
- (6) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$
a) 6^2 b) 6^4 c) 6^{11} d) 6^{23}

[Q2] Complete each of the following:

- 1) If tossing a fair die once, and observing the number on upper face, then the probability of getting a prime number = $\dots\dots\dots$
- 2) If $x^4 y^{-4} = 16$, then $\frac{x}{y} = \dots\dots\dots$
- 3) If $2^x = 15$, $2^y = 15$ then $2^{x-y} = \dots\dots\dots$
- 4) If: $x + y = 8$, $x^3 + y^3 = 24$, then $x^2 - xy + y^2 = \dots$
- 5) If the probability that a pupil succeed is 0.4 then the probability of his failure = $\dots\dots\dots$

[Q3] factorize completely each of the following :

① $xy - 5y + 6x - 30$ ② $x^2 + 7x + 6$

③ $x^3 - 125$ ④ $9x^2 - 16$

[Q4]

A) A positive integer , its square is more than its 3 times by 40 , find the number ?

B) If $x + x^{-1} = \sqrt{5}$, then find the value of : $x^2 + x^{-2}$ $x^3 + x^{-3}$

[Q5]

A) If $\frac{8^x \times 9^x}{18^x} = 64$, then find the value of 4^{-x}

B) In a football league, the probability of a team to win is 0.7 and the probability of a draw is 0.2 .if the number of matches supposed to be played by that team is 30 matches .

How many matches do you predict the team wins ?

How many matches do you predict the team loses ?

End of the questions

ALGEBRA — MODEL No

3

[Q1] Choose the correct answer:

- (1) $3^x + 3^x + 3^x = \dots\dots\dots$
 a) 3^{2x} b) 3^{x+1} c) 3^x d) 9^{x+1}
- (2) If: $x^2 + kx + 36$ is perfect square then $k = \dots\dots\dots$
 a) ± 6 b) ± 8 c) ± 12 d) ± 18
- (3) If: $x^2 + 14x + k$ can be factorize, then $k = \dots\dots\dots$
 a) 2 b) 7 c) 14 d) 49
- (4) If $2^x = 3$, $3^y = 2$, then $xy = \dots\dots\dots$
 a) 1 b) 2 c) 3 d) 6
- (5) The solution set of: $x^2 = 9^0$ in R is $\dots\dots\dots$
 a) $\{-3, 3\}$ b) $\{1\}$ c) $\{-1\}$ d) $\{1, -1\}$
- (6) If $a-b = 3$, $x-y = 5$, then $a(x-y) + b(x-y) = \dots\dots\dots$
 a) 8 b) 15 c) -8 d) -15

[Q2] Complete each of the following:

- If chosen a digit from a number 37542, then the probability of getting an even number = $\dots\dots\dots$
- If $2^{x-5} = (\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$, then $x^2 = \dots\dots\dots$
- A quarter of the number $(\sqrt{2})^{12} = \dots\dots\dots$
- If: $x + y = 3$, $x^2 - y^2 = 12$, then $x - y = \dots\dots\dots$
- The probability of the impossible event = $\dots\dots\dots$

[Q3] factorize completely each of the following :

A) $8x^3 + 27$ $2x^2 - 18$

B) $x^2 + 7x + 12$

$ab - 3b + 5a - 15$

[Q4]

A) A positive integer , if we add its square to its 3 times the result will be 18 , what is the number ?


B) Use factorization to get the value of each of the following easily:

$(0.6)^2 - 1.2 \times 10.6 + (10.6)^2$ 98×102

[Q5]

A) prove that : $\frac{27^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}} = \frac{1}{27}$

B) A class has 40 students, 30 students of them succeed in math , 24 students of them succeed in science , if one of them is chosen randomly from this class , find the probability that the student :
succeed in math failure in science


End of the questions

ALGEBRA — MODEL No**4****[Q1] Choose the correct answer:**

(1) $3x^0 = \dots\dots\dots$, where $x \neq 0$

- a) 0 b) 1 c) 3 d)
- $3x$

(2) If $x^2 - 5xy + 6y^2 = 10$, $x - 2y = 5$, then $x - 3y = \dots\dots\dots$

- a) 2 b) 7 c) 14 d) 49

(3) $2^{20} + 2^{21} = \dots\dots\dots$

- a)
- 2×2^{40}
- b)
- 2×2^{41}
- c)
- 3×2^{20}
- d)
- 3×2^{21}

(4) If : $kx^2 + 6x - 27$ can be factorize, then $k = \dots\dots\dots$

- a) 6 b) 3 c) 9 d) 5

(5) If $x = 5$ is solution of $x^2 - 6x + n$, then $n = \dots\dots\dots$

- a) 5 b) -5 c) 4 d) -4

(6) $(5^{x+2} - 5^{x+1}) \div 5^x = \dots\dots\dots$

- a) 5 b) 10 c) 15 d) 20

[Q2] Complete each of the following:

1) If $k^2 + m^2 = 21$, $mk = 3$, then $(k + m)^2 = \dots\dots\dots$

2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is

3) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

4) If : $kx^2 + 20x + 25$ is perfect square, then $k = \dots\dots\dots$

5) If $x + y = 5$, $a + b = 3$ then $ax + xb + ay + yb = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) $x^3 - 8$

$9x^4 - 36y^4$

B) $2x^2 + 10xy + 2y^2$

$x^2 - y^2 + 5x + 5y$

[Q4]

A) Two real numbers, the difference between them is 2 and the sum of their squares is 74. Find the two numbers ?

B) Use factorization to get the value of each of the following easily: $2 \times (26.18)^2 - 2 \times (23.82)^2$

[Q5]

A) If $3^{x+1} = 81$, $4^{x+y} = 1$, then find the value of x and y ?

B) A numbered cards is selected randomly from a set of similar cards numbered from 1 to 24, Find the probability of getting a card that carries : A multiple of 6 A number is perfect square

End of the questions

ALGEBRA – MODEL No**5****[Q1] Choose the correct answer:**(1) If $x^2 - m = (x - 7)(x + 7)$, then $m = \dots\dots\dots$

- a) 7 b) -7 c) 49 d) -49

(2) 1) If: $x^3 + y^3 = 15$, $x + y = 3$, then $x^2 - xy + y^2 = \dots\dots\dots$

- a) 3 b) 5 c) 15 d) 45

(3) If $x = 2$ is solution of $x^2 - 6x + k$, then $k = \dots\dots\dots$

- a) 8 b) -8 c) 4 d) -4

(4) If $2^x = 3$, $3^y = 16$, then $xy = \dots\dots\dots$

- a) 2 b) 4 c) -2 d) -4

(5) If: $x^2 + 7x + n$ can be factorize, then $n = \dots\dots\dots$

- a) 8 b) 10 c) 18 d) 49

(6) If: $0.05 \times 0.02 = 10^x$ then $x = \dots\dots\dots$

- a) -4 b) 0 c) 2 d) 4

[Q2] Complete each of the following:1) If $x^2 + ax + 25$ is perfect square, then $a = \dots\dots\dots$ 2) The S.S : $x(x - 3) = 5x$ in R is $\dots\dots\dots$ 3) If $2x^2 - 3x - 35 = (2x + m)(x - 5)$, then $m = \dots\dots\dots$ 4) $(x - 3)^0 = 1$ where $x \neq \dots\dots\dots$ 5) If $(\frac{1}{2})^x = 5$ then $8^{-x} = \dots\dots\dots$

[Q3] Factorize completely each of the following :

① $25x^2 - 49$

③ $x^2 - 8x + 12$

② $2x^3 + 250$

④ $ab + 4b + 5a + 20$

[Q4]

A) Find the length and width of rectangle its area is 40cm^2 and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

① $(\sqrt{3})^{x-1} = 9$

② $5^{x-1} \times 7^{1-x} = 1$


[Q5]

A) If $\frac{49^x \times 25^{2x} \times 3^{4x}}{(\sqrt{49})^{-x} \times (15)^{4x}} = 343$, then find the value of : 6^{2x}

B) in the experiment of composing 2-digit different number from the digits $\{1, 2, 3, 4\}$. find the sample space then Find the probability of getting :

① a number its tens is even

② a number both units and tens are even


End of the questions

ALGEBRA – MODEL No**6****[Q1] Choose the correct answer:**(1) If $x^2 + 10x + k$ is perfect square, then $k = \dots\dots\dots$

- a) 100 b) 25 c) 20 d) 10

(2) The solution set of : $3x^2 = 3x$ in R is $\dots\dots\dots$

- a)
- $\{3, -1\}$
- b)
- $\{-3, 1\}$
- c)
- $\{0, 1\}$
- d)
- $\{1, 3\}$

(3) If $3^x = 5$, $3^y = 7$, then $3^{x+y} = \dots\dots\dots$

- a) 12 b) 15 c) 21 d) 35

(4) If : $x^2 + ax - 12$ can be factorize, then $a = \dots\dots\dots$

- a) 7 b) 8 c) 4 d) 13

(5) Which of the following is true ($x \in R$)

- a)
- $9^x > 0$
- b)
- $x + 9 > 0$
- c)
- $x^9 > 0$
- d)
- $9x > 0$

(6) If the age of a man now is x year, then his age after 5 years is

- a)
- $X + 5$
- b)
- $X - 5$
- c)
- $5x$
- d)
- x

[Q2] Complete each of the following:1) If : $k^2 + m^2 = 21$, $km = 3$, then $k + m = \dots\dots\dots$ 2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is $\dots\dots\dots$ 3) If Sixth of the number $(2^{12} \times 3^{12}) = 6^k$, then $k = \dots\dots\dots$ 4) The S.S : $x^3 + 25x = 0$ in R is $\dots\dots\dots$ 5) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) ① $x^6 - 7x^3 - 8$ ② $16x^2 - a^2 + 6ax - 9x^2$

B) Use factorization to get the value of each of the following easily:

① $(14.06)^2 - 8.12 \times 14.06 + (4.06)^2$ ② $(998)^2 - 4$

[Q4]

A) Find real number that its twice exceed to its multiplicative inverse by 1 ?

B) find the value of x in each of the following :

① $3^{x-1} = 27$ ② $3^{x-3} = 2^{2x-6}$

[Q5] A) If $\frac{8^x \times 3^{2x}}{18^x} = 64$, then find the value of 4^{-x}

B) A box contains 40 cards numbered from 1 to 40. a card is drawn randomly. Calculate the probability of drawing card carrying :

- ① An even number
 - ② A number divisible by 5
 - ③ A number is perfect square
 - ④ A prim number less than 18
-

End of the questions

ALGEBRA – MODEL NO 7

[Q1] Choose the correct answer:(1) If: $x^2 - kx + 25$ is perfect square then $k = \dots\dots\dots$

- a) 5 b) 25 c) ± 10 d) ± 5

(2) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

- a) 4^4 b) $(16)^3$ c) 4^{12} d) 4^{81}

(3) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, then $x^{-1} = \dots\dots\dots$

- a) $\sqrt{3}$ b) 2 c) $\frac{\sqrt{3}}{\sqrt{2}}$ d) $\frac{\sqrt{3}}{3}$

(4) If: $k - m = 9$, $k + m = 15$ then $k^2 - m^2 = \dots\dots\dots$

- a) 135 b) 9 c) 150 d) $\frac{3}{5}$

(5) $2^0 + 2^{-1} - \left(\frac{-1}{\sqrt{2}}\right)^2 = \dots\dots\dots$

- a) 2 b) 0 c) 1 d) -1

(6) Quarter of $(\sqrt{2})^{12} = \dots\dots\dots$

- a) $(\sqrt{2})^3$ b) 2^3 c) 2^4 d) 12

[Q2] Complete each of the following:

1) $x^2(x+1)(x-1) = (\dots\dots\dots - \dots\dots\dots)(x+1)$

2) $x^2 - 5x + 6 = (\dots\dots\dots - 3)(x - \dots\dots\dots)$

3) The probability of an impossible event = $\dots\dots\dots$

4) $x^3 + 8 = (\dots\dots + 2)(x^2 \dots\dots + 4)$

5) $\sqrt{2} \times (\sqrt{2})^2 \times (\sqrt{2})^3 = \dots\dots\dots$ in the simplest form

[Q3]

- A) In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3. If the number of matches supposed to be played by that team is 30 matches. How many matches do you predict the team loses?
-

- B) The solution set of : $2x^2 - 5x = 3$ in \mathbb{R} is
-

[Q4]

- A) Find in the simplest form : $\frac{2^{2n+1} \times 5^{2n+1}}{10^{2n}}$
-

- B) If : $(9)^{x+3} = 3^{x+5}$, then find the value of x ?
-

[Q5] Factorize completely each of the following:

① $5x^2 - 3x - 2$

③ $a^2 - b^2c^4$

② $64x^4 + n^4$

④ $x^2 - 2xy + y^2 - z^2$

End of the questions

ALGEBRA — MODEL No 8

8

[Q1] Choose the correct answer:(1) If: $a^2 - b^2 = 16$, $b - a = 2$, then $a + b = \dots\dots\dots$

- a) 4 b) -8 c) 8 d) 2

(2) If: $\sqrt{x+5} = 3$ then $\sqrt{x} = \dots\dots\dots$

- a) 0 b) 2 c) 4 d) 9

(3) The S S of: $x^2 + 4 = 0$ in R is $\dots\dots\dots$

- a) $\{-4\}$ b) $\{-2, 2\}$ c) $\{-4, 4\}$ d) ϕ

(4) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$

- a) 6^2 b) 6^{11} c) 6^4 d) 6^{23}

(5) If: $4x^2 + 12x + a$ is perfect square then $a = \dots\dots\dots$

- a) 6 b) 16 c) 1 d) 9

(6) If: $4^5 = 5$, then $4^{x-1} = \dots\dots\dots$

- a) 1.25 b) 0.125 c) 0.8 d) 0.08

[Q2] Complete each of the following:1) If: $5^{x+3} = 7^{x+5}$, then $x = \dots\dots\dots$ 2) $(5x - 2y) = (25x^2 + 10xy + y^2) = \dots\dots\dots$ 3) If: $x = (\sqrt{2} + 3)^5$, $y = (\sqrt{2} - 3)^5$, then $xy = \dots\dots\dots$

4) In a mixed school there are 300 pupils, the probability of selecting perfect student is a boy 0.6, then the number of girls is $\dots\dots\dots$

5) If: $a^2 + 2ab + b^2 = 25$, then $a + b = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) $4a^4 - 9a^2 + 6a - 1$ ② $49x^2 - 25$

B) What is the real number which its double exceeds its multiplicative inverse by 1 ?

[Q4]

A) find the solution set in \mathbb{R} : $(x - 4)^5 = 32$

B) If : $\left(\frac{3}{5}\right)^{x+2} = \frac{125}{27}$ then find the value of x ?

[Q5]

A) If : $3^x = 27$, $4^{x+y} = 1$, then find the value of x and y

B) A box contains 7 black balls , 8 red balls and 5 white balls. If we draw one ball randomly, find the probability of getting : red ball
blue ball black or white ball

End of the questions

ALGEBRA — MODEL No**9****[Q1] Choose the correct answer:**(1) The S.S. in $R : x^2 + 9 = 0$ is

- a) $\{-3\}$ b) $\{3\}$ c) $\{-3, 3\}$ d) ϕ

(2) If: $a - b = 9$, $a + b = 15$, then $a^2 - b^2 = \dots\dots\dots$

- a) 81 b) 135 c) 144 d) 225

(3) If: $x^2 + 14x + b$ is perfect square then $b = \dots\dots\dots$

- a) 2 b) 7 c) 14 d) 49

(4) $\frac{4 \times 2^{-1}}{3^{-1}} = \dots\dots\dots$

- a) 6 b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{1}{6}$

(5) If: 4 times a number is 48, then third of this number is

- a) 16 b) 12 c) 4 d) 8

(6) If: x is an odd number, then the next odd number is

- a) $X + 1$ b) $X + 2$ c) $X + 3$ d) $X + 4$

[Q2] Complete each of the following:1) If: $6^x = 7$, then $6^{x-2} = \dots\dots\dots$ 2) The solution set in $R : x^2 = 5x$ is3) Quarter of the number $2^{50} = 2^{\dots\dots\dots}$ 4) If: $(x + 5)$ is one factor of: $x^3 + 125$ then the other factor is ...5) $1 \text{ L} = \dots\dots\dots \text{ cm}^3$.

[Q3]

A) Simplify : $\frac{4^{x+1} \times 9^{x-2}}{6^{2x}}$

B) Find the positive real number , if we add its twice to its square the result will be 35 ?

[Q4]

A) Factorize : $8y^3 + 1$ $x^2 - 10xy + 25y^2 - 36$

B) If : $8^{4x-1} = 32$, then find the value of x ?

[Q5]

A) Factorize : $4x^4 + 1$ $3x^2 + 7x + 2$

B) In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3 .If the number of matches supposed to be played by that team is 30 matches .
How many matches do you predict the team draw ?
How many matches do you predict the team loss ?



End of the questions

ALGEBRA — MODEL No

10

[Q1] Choose the correct answer:

(1) If: $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k = \dots\dots\dots$

- a)
- $-6x$
- b)
- $-3x$
- c)
- $3x$
- d)
- $6x$

(2) If: $x^2 + y^2 = 7$, $xy = 3$, $(x - y)^2 = \dots\dots\dots$

- a)
- -1
- b)
- 1
- c)
- ± 1
- d)
- 10

(3) If: $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

- a)
- $\frac{1}{512}$
- b)
- $\frac{1}{8}$
- c)
- $\frac{1}{2}$
- d)
- 2

(4) If: $3^x = 5$, then $27^x = \dots\dots\dots$

- a)
- 9
- b)
- 25
- c)
- 125
- d)
- 729

(5) If: $(x - 1)$ is one factor of: $x^2 - 4x + 3$ then the other factor is ...

- a)
- $X + 3$
- b)
- $X - 3$
- c)
- $X + 1$
- d)
- $X - 4$

(6) If: $x^2 + 4x + a$ is perfect square then $a = \dots\dots\dots$

- a)
- 3
- b)
- 4
- c)
- 8
- d)
- 16

[Q2] Complete each of the following:

1) If: $x + y = 7$, $x^2 - y^2 = 35$, $y - x = \dots\dots\dots$

2) The probability of an impossible event = $\dots\dots\dots$

3) If: $2^x = 5$, $2^{-y} = 3$, $2^{x+y} = \dots\dots\dots$

4) complete in the same pattern: $1, 4, 9, 16, 25, \dots\dots\dots$

5) If: $(25)^2 - (15)^2 = 10x$, then $x = \dots\dots\dots$

[Q3]

A) prove that : $\frac{(\sqrt{2})^2 \times 2^{1-x} \times 12^{2x-1}}{8^x \times 9^x} = \frac{1}{3}$

B) Two consecutive odd numbers their sum is 130 . find the two numbers ?

[Q4]

A) Factorize: ① $x^2 - 7x + 12$ ② $4x^4 + y^4$

B) If : $\frac{7^x \times 6^x}{14^2} = 3^{2-m}$, then find the value of $x + m$?

[Q5]

A) Factorize : ① $x^4 - 8x$ ② $ax - ay + x - y$

B) A basket contains balls numbered from 1 to 15 . a ball is drawn randomly. Calculate the probability of drawing ball carrying :

- ① An even number
- ② A number divisible by 3
- ③ A prime number

◆◆◆◆◆

End of the questions

Model Examinations of the School Book

on Algebra and Statistics

Model

1

Answer the following questions :

1 Complete the following :

- 1 If $2^{x+3} = 1$, then $x = \dots\dots\dots$
- 2 If $x + y = 4$, $x - y = 2$, then $x^2 - y^2 = \dots\dots\dots$
- 3 The solution set of the equation : $x^2 - 1 = 8$, where $x \in \mathbb{Z}^+$ is $\dots\dots\dots$
- 4 If $2^x = 3$, then $8^{-x} = \dots\dots\dots$
- 5 $1 - \frac{3}{4} = \dots\dots\dots \%$

2 Choose the correct answer :

- 1 $\frac{5^{-2} \times \sqrt{5}}{5\sqrt{5}} = \dots\dots\dots$
- (a) $\frac{1}{125}$ (b) $\frac{1}{25}$ (c) 25 (d) 125
- 2 $\mathbb{Z} - \mathbb{Z}^- = \dots\dots\dots$
- (a) \mathbb{Z}^+ (b) \mathbb{N} (c) \emptyset (d) $\{0\}$
- 3 The volume of a cube of side length 3 cm. equals $\dots\dots\dots \text{cm}^3$.
- (a) 9 (b) 12 (c) 27 (d) 81
- 4 The expression : $x^2 + kx + 36$ is a perfect square when k equals $\dots\dots\dots$
- (a) ± 6 (b) ± 8 (c) ± 12 (d) ± 18
- 5 A regular die is thrown and observed the upper face, then the probability of appearance a number divisible by 3 is $\dots\dots\dots$
- (a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$
- 6 If $\left(\frac{5}{3}\right)^x = \frac{27}{125}$, then $x = \dots\dots\dots$
- (a) -5 (b) -3 (c) 3 (d) 5

3 Factorize each of the following expressions :

- 1 $x^2 + 8x + 15$ 2 $2x^2 + 7x + 3$ 3 $x^3 - 1$ 4 $ax - 7a + 3x - 21$

4 [a] Simplify to the simplest form : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$ [b] Find the S.S. for the following equation where $x \in \mathbb{R}$: $x^2 - 8x + 12 = 0$ 5 [a] A bag contains a number of similar balls, 5 of them are white and the rest are red. If the probability of drawing a red ball is $\frac{2}{3}$, find the number of all the balls.[b] If $3^x = 27$, $4^{x+y} = 1$, find the values of : x and y

Model 2

Answer the following questions :

1 Complete the following :

1 If $7^{x-1} = 3^{x-1}$, then $x = \dots\dots\dots$

2 $x^3 - \dots\dots\dots = (x-2) (\dots\dots\dots + 2x+4)$

3 $(5x-2y)(25x^2+10xy+4y^2) = \dots\dots\dots$

4 If $\frac{2x}{5} = 6$, then $x = \dots\dots\dots$

5 A bag contains 9 cards labeled by numbers from 1 to 9, a card is drawn randomly, then the probability that the card carries an odd number is $\dots\dots\dots$

2 Choose the correct answer :

1 If $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

(a) 8

(b) $\frac{1}{8}$ (c) $\frac{1}{2}$

(d) 2

2 The expression : $x^2 + 4x + a$ is a perfect square when a equals $\dots\dots\dots$

(a) 3

(b) 4

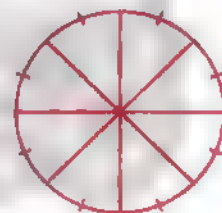
(c) 8

(d) 16

3 The S.S. of the equation : $x^2 - x = 0$ is $\dots\dots\dots$ where $x \in \mathbb{R}$

(a) $\{0\}$ (b) \emptyset (c) $\{0, 1\}$ (d) $\{1\}$

4 In the figure opposite the shaded region represents $\dots\dots\dots$ the circle.

(a) $\frac{1}{8}$ (b) $\frac{1}{6}$ (c) $\frac{1}{4}$ (d) $\frac{1}{3}$ 

5 If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

(a) -1

(b) 0

(c) $\frac{1}{3}$

(d) 1

6 If $6^x = 11$, then $6^{x+1} = \dots\dots\dots$

(a) 12

(b) 22

(c) 66

(d) 72

3 Factorize each of the following :

1 $4x^2 - 9$

2 $x^3 + 8$

3 $x^2 - 5x$

4 $x^2 - x - 6$

4 [a] Find in \mathbb{R} the S.S. of the following equation : $x^2 - x - 6 = 0$

[b] Simplify to the simplest form : $\frac{(\sqrt{2})^5 \times 3^{-2}}{3 \times (\sqrt{2})^9}$

5 [a] If $\frac{2^x \times 3^x}{(12)^x} = \frac{1}{2}$ find the value of x

- [b] A bag contains a number of similar balls. Some of them are red, 2 greens, 4 blues.
If the probability of drawing a ball with green colour is $\frac{1}{6}$, find the number of red balls.

Model for the merge students

Answer the following questions :

1 Choose the correct answer from those given :

- 1 The solution set of the equation : $x^2 + 25 = 0$ in \mathbb{R} is
 (a) $\{-5, 5\}$ (b) $\{5\}$ (c) $\{-5\}$ (d) \emptyset
- 2 If the expression : $x^2 + a x + 9$ is a perfect square, then $a =$
 (a) 3 (b) 6 (c) 9 (d) 18
- 3 If $(x - 1)$ is one factor of expression : $x^2 - 4x + 3$, then the other factor is
 (a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - y$
- 4 If $\left(\frac{5}{3}\right)^x = \left(\frac{3}{5}\right)^2$, then $x =$
 (a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$
- 5 The probability of the sure event =
 (a) 0 (b) $\frac{1}{2}$ (c) 1 (d) 2

2 Join from the column (A) to the suitable in the column (B) :

Column (A)	Column (B)
1 If $a^2 - b^2 = 15$, $a + b = 3$, then $a - b =$	• 5
2 If one digit of the number 37450 is chosen at random, then the probability of the chosen number is even =	• 6 • $\frac{2}{5}$
3 If $(x + 3y)^2 = x^2 + kxy + 9y^2$, then $k =$	• 0
4 $4^3 + 4^3 + 4^3 + 4^3 =$	• 4^4
5 The probability of the impossible event =	

Algebra and Statistics

3 Complete each of the following :

1 $x^2 - y^2 = (\dots - \dots) (\dots + \dots)$

2 $x^3 - 8 = (\dots - \dots) (x^2 + 2x + \dots)$

3 $x^2 - 5x + 6 = (x - \dots) (\dots - 3)$

4 $(a + b)x + (a + b)y = (a + \dots) (\dots + \dots)$

4 Put (✓) for the correct statements and (✗) for the incorrect ones :

1 A school has 320 pupils , if the probability of the chosen pupil is a boy , is 0.6 ,
then the number of girls = 120 ()2 If $3^x = 27$, then $x = \frac{1}{3}$ ()3 A card is drawn at random , from cards numbered from 1 to 10 ,
then the probability that the card carries an odd number greater than 3 is $\frac{3}{10}$ ()4 The positive real number which if its square is added to its three times ,
the result will be 28 is 4 ()5 The solution set of the equation : $x(x - 3)(x + 5) = 0$ in \mathbb{R} is $\{0, 3, -5\}$ ()5 Complete the solution in which the expression : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$ in its simplest form :

$$\frac{(2 \dots)^n \times (\dots \times 3)^{2n}}{2^{4n} \times 3^{2n}} = \frac{2 \dots \times \dots^{2n} \times 3^{2n}}{2^{4n} \times 3^{2n}}$$

$$= 2 \dots + 2n - \dots \times 3^{2n} \dots$$

$$= 2 \dots \times 3 \dots$$

$$= \dots$$

Schools Examinations of the previous years

on Algebra and Statistics

1

Cairo Governorate



Answer the following questions :

1 Choose the correct answer :

1 If $X^2 + kX + 25$ is a perfect square , then $k = \dots\dots\dots$

- (a) 5 (b) 10 (c) ± 10 (d) ± 5

2 If $5^{X+2} = 1$, then $X = \dots\dots\dots$

- (a) 1 (b) -2 (c) 2 (d) 5

3 If $X^2 - a = (X - 3)(X + 3)$, then $a = \dots\dots\dots$

- (a) 2 (b) -2 (c) 9 (d) -9

4 The half of the number 2^8 is $\dots\dots\dots$

- (a) 2^4 (b) 2^7 (c) 4 (d) -4

5 If $\left(\frac{2}{3}\right)^X = \frac{8}{27}$, then $X = \dots\dots\dots$

- (a) 2 (b) 1 (c) 8 (d) 3

6 If $X^3 + 8 = (X + 2)(X^2 + kX + 4)$, then $k = \dots\dots\dots$

- (a) $-2X$ (b) $4X$ (c) $2X$ (d) $-4X$

2 Complete the following :

1 The S.S. of $X^2 + 9 = 0$ in \mathbb{R} is $\dots\dots\dots$ 2 The multiplicative inverse of the number $(\sqrt{3})^4$ is $\dots\dots\dots$ 3 If $(X - 4)$ is a factor of the expression : $X^2 - 5X + 4$, then the other factor is $\dots\dots\dots$ 4 The probability of any event $A \in \dots\dots\dots$ 5 $(\sqrt{5})^3 \div 5\sqrt{5} = \dots\dots\dots$

3 [a] Factorize each of the following :

1 $aX + bX + 5a + 5b$ 2 $X^3 - 1$ 3 $X^4 + 4$ [b] Find in \mathbb{R} the S.S. of the equation : $X^2 + 9X + 18 = 0$ 4 [a] If $3^{X-1} = 27$, find the value of : X [b] Simplify to the simplest form : $\frac{(\sqrt{5})^7 \times (\sqrt{5})^3}{(\sqrt{5})^9 \times (\sqrt{2})^{-3}}$

Algebra and Statistics

5 [a] If $x = 3$, $y = \sqrt{3}$, find the value of : $\left(\frac{y}{x}\right)^{-2}$

[b] Simplify the following to the simplest form : $\frac{4^x \times 6^{2x}}{2^4 x \times 3^{2x}}$

2

Cairo Governorate

East Nile Governorate
Minaret Heliopolis School

Answer the following questions :

1 Complete each of the following :

- 1 The probability of the impossible event is
- 2 $a x + b y + b x + a y =$
- 3 Fifth the number 5^{20} is
- 4 If $3^x = 5$, then $(27)^x =$
- 5 The solution set of the equation : $x^2 + 1 = 0$ in \mathbb{R} is

2 Choose the correct answer :

- 1 If the probability that a student succeeds in a subject is 0.8 , then the probability of his failure is
 (a) 0 (b) 1 (c) 0.2 (d) 0.8
- 2 If $6^x = 7$, then $6^{x+1} =$
 (a) 42 (b) $\frac{7}{6}$ (c) 1 (d) 6
- 3 $4^3 + 4^3 + 4^3 + 4^3 =$
 (a) 4^{12} (b) 4^9 (c) 4^4 (d) 4^{81}
- 4 The solution set of equation : $x^2 - 5x + 4 = 0$ in \mathbb{R} is
 (a) $\{1, 4\}$ (b) $\{2, -2\}$ (c) \emptyset (d) $\{1\}$
- 5 A die is thrown then the probability of appearance number 7 is
 (a) 0 (b) 1 (c) $\frac{2}{5}$ (d) $\frac{1}{6}$
- 6 If $x^2 + kx + 25$ is a perfect square , then $k =$
 (a) 5 (b) 10 (c) ± 10 (d) ± 5

3 [a] Factorize each of the following completely :

1 $3a^2 + 7a + 2$

2 $5l + 10m + al + 2am$

[b] Find the value of the x in each of the following :

1 $(x - 3)^7 = 128$

2 $4^{2x-1} = 1024$

3 $5^{x-7} = 1$

4 [a] Simplify each of the following :

1
$$\frac{(\sqrt{3})^{-4} \times (\sqrt{2})^{-5} \times (\sqrt{3})^{-3}}{(\sqrt{3})^{-9} \times (\sqrt{2})^{-7}}$$

2
$$\left(\frac{2\sqrt{3}}{3\sqrt{2}}\right)^4$$

[b] A bag contains balls labeled by the numbers from 1 to 15 if a ball is drawn at random Find the probability that the drawn ball carries each of the following :

1 An even number.

2 A number divisible by 3

3 A prime number.

5 [a] In producing 600 electric lamps , if the probability of the defected lamps is 0.05 , then find the number of the good lamps and also the number if the defected.

[b] Find in \mathbb{R} the solution set of each of the following :

1 $x^2 - 9 = 0$

2 $x^2 = 5x$

3 $3x = -x^2 - 2$

3

Cairo Governorate

Zakrooly Educational Administration
Gomhoreya Language School

Answer the following questions :

1 Choose the correct answer :

1 If $6^x = 7$, then $6^{x+1} = \dots\dots\dots$

(a) 8

(b) 13

(c) 36

(d) 42

2 If the expression : $a x^2 + 12x + 9$ is a perfect square , then $a = \dots\dots\dots$

(a) 3

(b) 4

(c) 9

(d) 16

3 If $xy = 3$, $(x+y)^2 = 16$, then $x^2 + y^2 = \dots\dots\dots$

(a) 4

(b) 10

(c) 13

(d) 8

4 If a regular die is tossed once , then the probability of appearing the number 7 is $\dots\dots\dots$

(a) $\frac{1}{7}$

(b) $\frac{1}{6}$

(c) 1

(d) 0

5 $3^{\text{zero}} + 3^{-1} - \left(\frac{1}{\sqrt{3}}\right)^2 = \dots\dots\dots$

(a) 3

(b) 1

(c) $\frac{1}{3}$

(d) 0

6 If $x + y = 3$, $x^2 - xy + y^2 = 5$, then $x^3 + y^3 = \dots\dots\dots$

(a) 15

(b) 25

(c) 8

(d) 7

2 Complete each of the following :

1 If three times a number is 3^3 , then $\frac{2}{3}$ this number = $\dots\dots\dots$

2 If $x + y = 7$ and $a - 2b = 4$, then the numerical value of the expression :

$a(x+y) - 2b(x+y) = \dots\dots\dots$

Algebra and Statistics

3 If $\left(\frac{2}{3}\right)^x = \frac{27}{8}$, then $x = \dots\dots\dots$

4 A class has 50 students (boys and girls), if the probability of choosing a girl randomly is 0.6, then the number of boys = $\dots\dots\dots$

5 If $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

3 [a] Factorize each of the following completely :

1 $9 - y^2$

2 $4x^4 + 81y^4$

[b] If $2^{x-2} = \left(\frac{1}{2\sqrt{2}}\right)^2$ Find the value of : x

4 [a] Find in \mathbb{R} the S.S. of the equation : $3x^2 + 15x - 18 = 0$

[b] Simplify to the simplest form : $(3^{x-1} \times 2^{x+1}) \div 6^{x-1}$

5 [a] A positive real number, if its square is added to three times of it then the result equals 28 Find this number.

[b] A box has 15 regular balls, 3 of them are white, 9 of them are black, a ball is choosing randomly.

Find the probability of the drawn ball is :

1 Black.

2 Not white and not black.

4

Giza Governorate

Baraon Mier Language School

Answer the following questions :

1 Choose the correct answer :

1 The S.S. of the equation : $x^2 - 1 = 8$ in \mathbb{R} is $\dots\dots\dots$

(a) \emptyset

(b) $\{3\}$

(c) $\{-3\}$

(d) $\{-3, 3\}$

2 If $6^x = 7$, then $6^{x+1} = \dots\dots\dots$

(a) 8

(b) 13

(c) 36

(d) 42

3 If a die is thrown once, then the probability that the number 5 appears is $\dots\dots\dots$

(a) $\frac{5}{6}$

(b) $\frac{1}{2}$

(c) $\frac{1}{6}$

(d) $\frac{0}{6}$

4 If $7^{x-3} = 5^{x-3}$, then $x = \dots\dots\dots$

(a) 5

(b) 7

(c) 3

(d) 0

5 $2^{12} \times 3^{12} = \dots\dots\dots$

(a) 6^2

(b) 6^4

(c) 6^{12}

(d) 6^{24}

6 If the expression : $x^2 + 14x + b$ is a perfect square , then $b = \dots\dots\dots$

(a) 2

(b) 7

(c) 14

(d) 49

2 Complete each of the following :

1] $\left(\frac{3}{5}\right)^x = \frac{27}{125}$, then $x = \dots\dots\dots$

2] The solution set of the equation : $x^2 + 9 = 0$ in \mathbb{R} is $\dots\dots\dots$

3] If the probability that a student failed is 7% , then the probability that this student succeeded is $\dots\dots\dots$

4] If $3^x = 81$, then $x = \dots\dots\dots$

5] The age of a man now x years, then his age 7 years ago is $\dots\dots\dots$ years.

3 [a] Factorize each of the following :

1] $8x^2 - 50$

2] $x^4 + 4y^4$

[b] If a real number is added to its square the result will be 12 , find this number.

4 [a] Find in \mathbb{Q} the solution set of :

1] $x^2 - x = 12$

2] $4x^2 - 25 = 0$

[b] If $\frac{8^x \times 9^x}{18^x} = 64$, find : x

5 [a] A box contains a similar balls , 8 white balls , 5 red balls and 7 black balls , if we choose a ball , then find the probability that the ball is :

1] White.

2] Black or red.

[b] Find the value of x if : $2^{x-2} = 16$

5

Giza Governorate

Dokki District

Modern Teacher Language School



Answer the following questions :

1 Complete each of the following :

1] If $x = 3$ is a solution of the equation : $x^2 + 2x + k = 0$, then $k = \dots\dots\dots$

2] The solution set of the equation : $x^2 + 4 = 0$ in \mathbb{R} is $\dots\dots\dots$

3] The quadratic equation : $(x + \dots\dots\dots)(3x - 2) = 0$ is equivalent to $\dots\dots\dots + \dots\dots\dots - 10 = 0$

4] If $3^{x-2} = 27$, then $x = \dots\dots\dots$

5] There are 21 boys and 15 girls in a classroom , if a student is chosen at random , then the probability that the student is a boy = $\dots\dots\dots$

Algebra and Statistics

2 Choose the correct answer :

1 The solution set in \mathbb{R} of the equation : $(x-1)^2 = 0$ is

- (a) $\{0\}$ (b) $\{-1\}$ (c) $\{1, -1\}$ (d) $\{1\}$

2 If $3^x + 3^x + 3^x = 1$, then $x =$

- (a) -1 (b) 0 (c) 1 (d) 2

3 3^{-2} equals

- (a) 9 (b) $\frac{1}{9}$ (c) $-\frac{1}{9}$ (d) -9

4 $2^{12} \times 3^{12} =$

- (a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}

5 A die is thrown once, then the probability that 5 appears is

- (a) $-\frac{5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

6 The expression : $x^2 + ax + 2$ can be factorized, then $a =$

- (a) 1 (b) 2 (c) 3 (d) 4

3 [a] Solve in \mathbb{R} the equations :

1 $x^2 - x - 12 = 0$

2 $x(x-2) - 2(2-x) = 0$

[b] The length of a rectangle is more than its width by 5 cm. If its area is 36 cm^2 , then find its dimensions and its perimeter.

4 [a] Simplify : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the answer when $x = 2$

[b] If the sum of the square of a positive number and three times this number is 28, then find the value of this number.

5 [a] Find the value of x if : $3^{2x-3} = 243$

[b] A bag contains 20 balls numbered from 1 to 20, if one ball is drawn at random, then find the probability that :

- 1 The number is a multiple of 4
2 The number is less than or equal 7

6

Giza Governorate

Answer the following questions :

1 Choose the correct answer :

1 $(x-2)^2 =$

- (a) $x^2 - 4$ (b) $(2+x)^2$ (c) $x^2 + 4$ (d) $x^2 - 4x + 4$

2 $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

(a) 4^3

(b) 4^4

(c) 4^{12}

(d) 4^{81}

3 If $kx^2 - 12x + 4$ is a perfect square, then $k = \dots\dots\dots$

(a) -6

(b) -4

(c) -2

(d) 9

4 If $\frac{a}{b} = 1$, then $4a - 4b = \dots\dots\dots$

(a) 8

(b) 4

(c) 1

(d) 0

5 If $x + y = 3$, $x^2 - xy + y^2 = 5$, then $x^3 + y^3 = \dots\dots\dots$

(a) 15

(b) 25

(c) 8

(d) 7

6 If $3^x = 2$, then $27^x = \dots\dots\dots$

(a) 9

(b) 4

(c) 8

(d) 1

2 Complete the following :

1 If $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

2 A bag contains 9 cards labeled by numbers from 1 to 9, a card is drawn randomly, then the probability that this card carries an odd number = $\dots\dots\dots$

3 The S.S. of the equation : $x^2 + 1 = 0$ in \mathbb{R} is $\dots\dots\dots$

4 If $\frac{2x}{5} = 6$, then $x - 5 = \dots\dots\dots$

5 $(a - 2)(2a - 3) = \dots\dots\dots - 7a + \dots\dots\dots$

3 Factorize each of the following :

1 $3x^2 - 48$

2 $x^2 - 7x + 10$

3 $x^3 + 2x^2 - 4x - 8$

4 $2x^3 - 16y^3$

4 [a] Find the S.S. in \mathbb{R} :

1 $3^{2n-5} = 1$

2 $\left(\frac{2}{3}\right)^{2n} = \frac{81}{16}$

[b] A bag contains cards numbered from 1 to 20 and card drawn randomly

Find the probability of :

1 Getting a number divisible by 4

2 Getting a number multiple of 7

5 [a] Find the real number which if we added its square to its three times, it becomes 28

[b] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

7

Alexandria Governorate

Faymour English School



Answer the following questions :

1 Complete the following :

1 If $a = \sqrt{3}$, $b = \sqrt{2}$, then the value of $\frac{a^4}{b^4} = \dots\dots\dots$

2 $\frac{(10)^2 \times (10)^{-7}}{(0.1)^2 \times 0.001} = \dots\dots\dots$

3 A numbered card is selected at random from a set of similar cards numbered from 1 to 24 , the probability of getting a card carries a multiple of 4 is $\dots\dots\dots$

4 $(9a^2 - 4b^2) = (3a - \dots\dots\dots)(\dots\dots\dots + 2b)$

5 $(x + 3y)^2 = x^2 + \dots\dots\dots + 9y^2$

2 Choose the correct answer :

1 If $(x + 3)$ is a factor of the expression : $x^2 + x - 6$, then the other factor is $\dots\dots\dots$ (a) $(x - 2)$ (b) $(x - 3)$ (c) $(x + 2)$ (d) $(x + 6)$ 2 If $3^x = 27$, $4^{x+y} = 1$, then $y = \dots\dots\dots$

(a) 0 (b) 3 (c) -3 (d) 1

3 The S.S. of the equation : $x^2 - 3 = 0$ in \mathbb{R} is $\dots\dots\dots$ (a) $\{3, -3\}$ (b) $\{\sqrt{3}\}$ (c) 9 (d) $\{-\sqrt{3}, \sqrt{3}\}$

4 $(\sqrt{3} + \sqrt{2})^9 (\sqrt{3} - \sqrt{2})^9 = \dots\dots\dots$

(a) 1 (b) $\sqrt{5}$ (c) $\sqrt{6}$ (d) 55 Which of the following may be equal the probability of an event $\dots\dots\dots$ (a) -0.73 (b) 1.23 (c) 79 % (d) $\frac{4}{3}$ 6 If $x^3 + 27 = (x + 3)(x^2 + kx + 9)$, then $k = \dots\dots\dots$

(a) -6x (b) -3x (c) 3x (d) 6x

3 [a] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] Find the value of x : $\left(\frac{2}{5}\right)^{2x+1} = \frac{8}{125}$

4 Factorize each of the following :

1 $(x + 2)^3 - 4x - 8$

2 $a^2 + 2ab + b^2 - c^2$

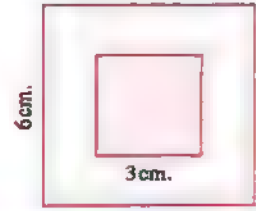
3 $5a^2 - 18a + 16$

4 $xy + 5y + 7x + 35$

5 [a] Find the S.S. in $\mathbb{R} : 2x^3 = 18x$

[b] In the opposite figure :

Two squares, if a person shoot at a picture in the figure then find the probability of hitting the shaded part.



8

Alexandria Governorate

Mid-Educational Zone
Maths Supervision

Answer the following questions :

1 Complete each of the following :

- 1 The simplest form of : $(\sqrt{3})^3 \times (\sqrt{3})^5 = \dots\dots\dots$
- 2 If $x + y = 5$, $x - y = 3$, then $x^2 - y^2 = \dots\dots\dots$
- 3 If $x - 6 = 0$, then $x = \dots\dots\dots$
- 4 $y^3 - \dots\dots\dots = (y - 2)(y^2 + \dots\dots\dots + 4)$
- 5 $(\sqrt{7} + \sqrt{6})^8 (\sqrt{7} - \sqrt{6})^8 = \dots\dots\dots$

2 Choose the correct answer :

- 1 The expression : $x^2 + 8x + a$ is a perfect square when $a = \dots\dots\dots$
 (a) -4 (b) 4 (c) 8 (d) 16
- 2 A die is thrown once , then the probability of appearance 7 on the upper face is $\dots\dots\dots$
 (a) $-\frac{5}{6}$ (b) $\frac{1}{6}$ (c) 0 (d) $\frac{5}{6}$
- 3 If $(x + 3)^{\text{zero}} = 1$, then $x \in \dots\dots\dots$
 (a) $\mathbb{R} - \{3\}$ (b) $\mathbb{R} - \{-3\}$ (c) $\{3\}$ (d) \mathbb{R}
- 4 If the age of Kamal now is x years , then his age 3 years ago was $\dots\dots\dots$ years.
 (a) $x + 3$ (b) $3x$ (c) $x - 3$ (d) $6x$
- 5 The multiplicative inverse of 1 is $\dots\dots\dots$
 (a) 0 (b) 1 (c) 2 (d) 3
- 6 $3^3 + 3^3 + 3^3 = \dots\dots\dots$
 (a) 3^3 (b) 3^4 (c) 3^{12} (d) 3^{81}

3 [a] Factorize :

1 $9x^2 - 4$

2 $10y^2 - 7y - 12$

3 $4x^4 + 1$

[b] Find the solution set in \mathbb{R} for : $2x^2 - 2x - 12 = 0$

Algebra and Statistics

- 4 [a] Find in the simplest form : $\frac{x^6 \times x^2}{x^3}$ where $x \neq 0$
 [b] Factorize : $3x - 21 + ax - 7a$

- 5 [a] A numbered card is selected randomly from a set of similar cards numbered from 1 to 15
 Find the probability of getting a card carries :
 1 A prime number. 2 A number divisible by 3
 [b] If $2^{x-2} = 32$, then find the value of : x

9

El-Kalyoubia Governorate



Answer the following questions :

- 1 Choose the correct answer :

1 $\mathbb{Z} - \mathbb{Z}^- = \dots\dots\dots$

- (a) \mathbb{Z}^+ (b) \mathbb{N} (c) \emptyset (d) $\{0\}$

2 The volume of the cube of side length 3 cm. equals cm^3

- (a) 9 (b) 12 (c) 27 (d) 81

3 The expression : $x^2 + 4x + a$ is a perfect square when $a = \dots\dots\dots$

- (a) 3 (b) 4 (c) 8 (d) 16

4 The S.S. of the equation : $x^2 - x = 0$ is in \mathbb{R}

- (a) $\{0\}$ (b) \emptyset (c) $\{0, 1\}$ (d) $\{1\}$

5 If $(x - 1)$ is one factor of the expression : $x^2 - 4x + 3$, then the other factor is

- (a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - 4$

6 If $\left(\frac{5}{3}\right)^x = \left(\frac{3}{5}\right)^2$, then $x = \dots\dots\dots$

- (a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

- 2 Complete :

1 If $7^{x-1} = 3^{x-1}$, then $x = \dots\dots\dots$

2 A bag contains 9 cards labled by numbers from 1 to 9, a card is drawn randomly, then the probability that the card carries an odd number is

3 $a^{-4} + 1 = a^{-4} (\dots\dots\dots + \dots\dots\dots)$ where $a \neq 0$

4 $1 - \frac{3}{4} = \dots\dots\dots$

5 $4^3 + 4^3 + 4^3 + 4^3 = 4^{\dots\dots\dots}$

3 [a] Factorize :

1 $x^2 - y^2$

2 $y^3 + 8$

[b] Find the S.S. of the following equation in \mathbb{R} : $x^2 - x - 6 = 0$

4 [a] Factorize :

1 $a^2x - 7a + 3x - 21$

2 $x^2 - 5x$

[b] If $3^x = 27$, $4^{x+y} = 1$, find the value of : x, y

5 [a] Find in the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{(6)^{2x}}$, then calculate the result when $x = 1$

[b] If one digit of the number 37450 chosen at random , find the probability that the chosen digit is an even number.

10

El-Monofia Governorate

Kutubna Education Department

Mathematics Supervision



Answer the following questions : (Calculator is premitted)

1 Choose the correct answer from those given :

1 $0.002 \times 0.05 = \dots\dots\dots$

(a) 10^{-5}

(b) 10^{-4}

(c) 10^4

(d) 10^5

2 The expression : $(x - 2y)(x^2 + 2xy + 4y^2)$ equals

(a) $x^3 - 2y^3$

(b) $x^3 - 8y^3$

(c) $x^3 + 8y^3$

(d) $x^3 + 18y^3$

3 The value of the expression : $5^{20} + 5^{21}$ equals

(a) 5×5^{40}

(b) 5×5^{41}

(c) 6×5^{20}

(d) 6×5^{21}

4 The value of the expression : $2^5 + (\sqrt{2})^{10}$ equals

(a) 2^6

(b) 2^{10}

(c) $(\sqrt{2})^{15}$

(d) $(\sqrt{2})^{20}$

5 If the probability of choosing a boy from a class of 40 students is 0.375 , then the number of girls is girls.

(a) 35

(b) 25

(c) 20

(d) 15

6 The solution set of the equation : $(x - 1)^2 = 0$ in \mathbb{R} is

(a) $\{-1\}$

(b) $\{1\}$

(c) $\{-1, 1\}$

(d) $\{2\}$

2 Complete :

1 The expression : $x^2 - 2x + k$ is perfect square when $k = \dots\dots\dots$

2 If $3^x \times 2^{-x} = 1.5$, then $x = \dots\dots\dots$

Algebra and Statistics

3 If $a^2 + b^2 = 7$, $a b = 3$, then $(a - b)^2 = \dots\dots\dots$

4 $X(y - z) + L(y - z) = (y - z)(\dots\dots\dots)$

5 $\left(\frac{\sqrt{3}}{9}\right)^{-1} = (\sqrt{3})^{\dots\dots\dots}$

3 [a] An integer is added to its multiplicative inverse the result equals 2 Find the number.

[b] Factorize each of the following :

1 $3x^2 - 15x + 12$

2 $\frac{1}{3}x^3 - 9$

3 $x^4 + 9x^2 + 81$

4 [a] Simplify : $\frac{4^{x+1} \times 9^{2-x}}{(6)^{2x}}$, then calculate its value at $x = 1$

[b] If $x = \frac{\sqrt{3}}{2}$, $y = \frac{1}{\sqrt{3}}$, $z = \frac{\sqrt{2}}{2}$, find the value : $x^2 + (xz)^2 \times y^2$

5 [a] A set of cards numbered from 0 to 10 , if a card is drawn randomly , find the probability of each :

1 Drawing a card carries odd number.

2 Drawing a card carries a number divisible by 5

[b] Factorize each of the following :

1 $a^2x - 7a + 3x - 21$

2 $9x^2 - 25$

11

El-Dakahlia Governorate



Answer the following questions :

1 Complete each of the following :

1 If $3^{x-1} = 27$, then $x = \dots\dots\dots$

2 If $(x - 5)^0 = 1$, then $x \in \dots\dots\dots$

3 $a + b = 2(x + y) = 14$, then $a(x + y) + b(x + y) = \dots\dots\dots$

4 The probability of impossible event = $\dots\dots\dots$

5 If the perimeter of square x cm. , then its area = $\dots\dots\dots$

2 Choose the correct answer :

1 If $6^x = 7$, then $6^{x+1} = \dots\dots\dots$

(a) 8

(b) 13

(c) 36

(d) 42

2 If the product of multiplying four by a number equals 48 ,
then the third of this number =

- (a) 4 (b) 8 (c) 12 (d) 16

3 The value of $2^5 + (\sqrt{2})^{10} = \dots\dots\dots$

- (a) 2^6 (b) 2^{10} (c) $(\sqrt{2})^{15}$ (d) $(\sqrt{2})^{20}$

4 The S.S. of the equation : $x^3 + 9x = 0$ in \mathbb{R} is

- (a) $\{0, 3\}$ (b) $\{0\}$ (c) $\{0, -3\}$ (d) $\{0, 3, -3\}$

5 If $2^x = 5$, then $8^x = \dots\dots\dots$

- (a) $\frac{5}{8}$ (b) 25 (c) 125 (d) $\frac{64}{125}$

6 If $y^3 - a = (y - 2)(y^2 + 2y + 4)$, then $a = \dots\dots\dots$

- (a) 2 (b) 4 (c) 8 (d) -8

3 Factorize :

1 $x^4 + y^4 - 11x^2y^2$

2 $9x^2 - 4a^2 + y^2 + 6xy$

3 $3x^3 - 2x^2 + 12x - 8$

4 $25x^2 - 30x + 9$

4 [a] If the length of a rectangle 5 cm. more than its width and its area 36 cm^2
Find its perimeter.

[b] If $(\sqrt{\frac{2}{3}})^x = \frac{4}{9}$ Find the value of : $(\frac{2}{3})^{x-1}$

5 [a] Prove that : $\frac{(27)^{x-1} \times 8^x}{(2\sqrt{3})^{2x} \times (3\sqrt{2})^{2x}} = \frac{1}{27}$

[b] A team plays 30 matches in national league , its drawn probability is 0.3 and its win probability is 0.6 Calculate the number of loss matches.

12

Ismailia Governorate

Department of Education
English Language Section



Answer the following questions :

1 Complete each of the following :

1 $4a(x+y) - 3b(x+y) = (x+y)(\dots\dots\dots - \dots\dots\dots)$

2 The S.S. of the equation : $x^2 + 3x = 0$ in \mathbb{R} is

3 If $3^x = 27$, then $x = \dots\dots\dots$

4 The probability of impossible event is

Algebra and Statistics

- 5 If the probability of absent pupils in a school is $\frac{2}{19}$, then the probability of present pupils is

2 Choose the correct answer :

- 1 If $(X - 5)^{\text{zero}} = 1$, then $X \in$

(a) $\mathbb{R} - \{5\}$ (b) $\mathbb{R} - \{-5\}$ (c) $\{5\}$ (d) \mathbb{R}

- 2 The S.S. in \mathbb{R} of the equation : $X^2 + 25 = 0$ is

(a) $\{5\}$ (b) $\{5, -5\}$ (c) \emptyset (d) $\{-5\}$

- 3 If $5^X = 2$, then $5^{X+2} =$

(a) 25 (b) 2 (c) 50 (d) 100

- 4 A bag contains 20 balls, 8 of them are white and the rest are black, then the probability of the drawn ball is black is

(a) 1 (b) 0.6 (c) 0 (d) $\frac{8}{20}$

- 5 Which of the following can be probability of an event ?

(a) 1.2 (b) $\frac{4}{3}$ (c) -0.2 (d) 37 %

- 6 If $X^2 - a = (X - 3)(X + 3)$, then $a =$

(a) 3 (b) -3 (c) 9 (d) -9

- 3 [a] Factorize : 1 $X^3 - 3X^2 + 6X - 18$

- 2 $3X^3 - 81$

- [b] If $\left(\frac{2}{5}\right)^{2X-1} = \frac{8}{125}$ Find the value of : X

- 4 [a] A positive real number if you add its square to its three times the result will be 28 find the number.

- [b] Find in \mathbb{R} the S.S. of : $X^2 - 8X = -15$

- 5 [a] If a card is chosen randomly from 10 cards numbered from 1 to 10, then the probability that the number on the chosen card is :

1 Even. 2 Divisible by 3

3 Even prime.

- [b] Prove that : $\frac{(27)^{X-1} \times 8^X}{(2\sqrt{2})^{2X} \times (3\sqrt{3})^{2X}} = \frac{1}{27}$

13

Damietta Governorate



Answer the following questions :

1 Choose the correct answer from those given :

1 $3^{-2} = \dots\dots\dots$

(a) -9

(b) $\frac{1}{9}$

(c) $-\frac{1}{9}$

(d) 9

2 $\sqrt{100-64} = 10 - \dots\dots\dots$

(a) 4

(b) 6

(c) 8

(d) -6

3 If a coin thrown once , then the probability of appearing tail = $\dots\dots\dots$

(a) 1

(b) 0.3

(c) 0.5

(d) 0

4 The solution set of the equation : $x^2 + 9 = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) $\{3\}$

(b) $\{-3\}$

(c) \emptyset

(d) $\{3, -3\}$

5 $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

(a) 4^3

(b) 4^4

(c) 4^{12}

(d) 4^{81}

6 The expression : $a x^2 - 40 x + 25$ is a perfect square when $a = \dots\dots\dots$

(a) 2

(b) 4

(c) 9

(d) 16

2 Complete each of the following :

1 If the probability that a pupil succeed is 0.8 , then probability of his failure = $\dots\dots\dots$

2 If $7^x = 1$, then $x = \dots\dots\dots$

3 $2 \times 6 - 8 \div 4 = \dots\dots\dots$

4 If $2^x = 5$, then $2^{-x} = \dots\dots\dots$

5 If $x - y = 3$ and $x + y = 4$, then $x^2 - y^2 = \dots\dots\dots$

3 [a] Simplify : $\frac{(\sqrt{3})^8 \times (\sqrt{3})^{-14}}{(\sqrt{3})^{-4}}$

[b] Find the solution set of the following equation in \mathbb{R} : $x^2 - 8x = -15$

4 [a] Factorize each of the following expressions :

1 $x^2 - 4y^2$

2 $x^4 + 4y^4$

[b] Find the solution set of the following equation in \mathbb{R} : $3^{x-4} = 9$

Algebra and Statistics

5 [a] If $a = \sqrt{2}$, $b = \sqrt{3}$, find the numerical value of : $\frac{b^4 - a^4}{b^2 + a^2}$

[b] A box contains 5 white , 2 red , 3 green balls , a ball is drawn randomly from the box
Calculate the probabilities of the following events :

1 The ball is white.

2 The ball yellow.

3 The ball is not red.

14

El-Fayoum Governorate

Directorate of Education
Supervision of Mathematics



Answer the following questions :

1 Choose the correct answer :

1 If $\frac{a}{b} = 1$, then $4a - 4b = \dots\dots\dots$

(a) 8

(b) 4

(c) 1

(d) 0

2 If the probability that a pupil succeeds is 0.7 , then the probability of his failure is $\dots\dots\dots$

(a) 0.7

(b) 0.07

(c) 0.3

(d) 0.03

3 If the age of Ahmed now is x years , then the square of his age is $\dots\dots\dots$ years.

(a) x^2

(b) $2x$

(c) $2x^2$

(d) $x + 2$

4 $(-1)^3 + (-1)^5 = \dots\dots\dots$

(a) 0

(b) -2

(c) 2

(d) 201

5 $(5a)^0 = \dots\dots\dots$, $a \neq 0$

(a) 5

(b) a

(c) $5a$

(d) 1

6 If $x - 2y = 3$, $x^2 - 4y^2 = 21$, then $x + 2y = \dots\dots\dots$

(a) 14

(b) 9

(c) 7

(d) 6

2 Complete each of the following :

1 $\frac{3}{4} = \dots\dots\dots\%$

2 If $a = 7^x$, $b = 7^{-x}$, then $a \times b = \dots\dots\dots$

3 $2^{-3} \times 2^{-2} \div 4^{-3} = \dots\dots\dots$

4 The solution set of the equation : $x^2 - 6x = 0$ in \mathbb{R} is $\dots\dots\dots$

5 If a fair coin is tossed once , then the probability of appearance of a head = $\dots\dots\dots$

3 [a] Factorize each of the following completely :

1 $36 - 60k + 25k^2$

2 $x^4 + 64$

[b] Find in \mathbb{R} the S.S. of the following equation : $x^2 + x = 6$

4 [a] Simplify to the simplest form : $\frac{(\sqrt{5})^{10} \times (-\sqrt{5})^5}{(\sqrt{5})^{11}}$

[b] A regular die is thrown once Find the probability of the appearance a number is :

1 Even.

2 Between 0 and 6

3 Prime.

5 [a] Find in \mathbb{R} the S.S. of the following equation : $2^{n-3} = \frac{1}{4}$

[b] Simplify to the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then calculate its value at $x = 1$

15

El-Menia Governorate

El-Menia Educational Directorate
Mina Kawmia Language School



Answer the following questions :

1 Complete the following :

1 The solution set of the equation : $x^2 - 1 = 8$, where $x \in \mathbb{Z}^+$ is

2 If $3^{x-4} = 1$, then $x = \dots\dots\dots$

3 The S.S. of the equation : $x^2 - 25 = 0$ in \mathbb{R} is

4 If $\left(\frac{2}{3}\right)^x = \frac{3}{2}$, then $x = \dots\dots\dots$

5 The volume of a cube of side length 3 cm. equals cm^3

2 Choose the correct answer :

1 The S.S. of the equation : $x(x-2) = 0$ in \mathbb{R} is

(a) $\{0\}$

(b) $\{2\}$

(c) $\{0, 2\}$

(d) $\{0, -2\}$

2 If $x^3 y^{-3} = 8$, then $\frac{x}{y} = \dots\dots\dots$

(a) $\frac{1}{512}$

(b) $\frac{1}{8}$

(c) $\frac{1}{2}$

(d) 2

3 The expression : $x^2 + kx + 36$ is a perfect square when k equals

(a) ± 6

(b) ± 8

(c) ± 12

(d) ± 18

4 $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

(a) 4^{12}

(b) 16^{12}

(c) 16^2

(d) 16^3

5 If the probability of success of a student is 0.75, then the probability of his failure is

(a) 0.20

(b) 0.25

(c) 0.30

(d) 0.35

Algebra and Statistics

- 6 If $(x - 1)$ is one factor of expression : $x^2 - 4x + 3$, then the other factor is
- (a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - y$

3 [a] If $\frac{8^x \times 9^x}{18^x} = 64$ find : x

[b] Find the S.S. of the equation in \mathbb{R} : $x^2 - 1 = 8$

4 Factorize each of the following expressions :

1 $a^2x - 7a + 3x - 21$

2 $x^3 + 8$

3 $x^2 - x - 6$

4 $4x^2 - 9$

5 $x^4 + 324$

5 [a] If $(3)^{x-2} = 9$, then find the value of : x

- [b] A colored marble is drawn randomly out of a box containing 12 red marbles , 18 white marbles and 20 blue marbles.

Find the probability of selecting :

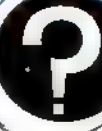
1 A white marble.

2 A yellow marble.

3 A red or blue marble.

4 A non red marble.

Schools Examinations



on Algebra and Statistics

1

Cairo Governorate

East Naser City Administration
Al Raya Language School

Answer the following questions :

1 Complete :

- 1 If $x + y = 4$, $x - y = 2$, then $x^2 - y^2 = \dots\dots\dots$
- 2 A bag contain a number of similar balls , 4 of them are white and the rest is red , if the probability of drawing a white ball is $\frac{2}{3}$, then the number of red balls equals $\dots\dots\dots$
- 3 If $3^x = 81$, then $x + 1 = \dots\dots\dots$
- 4 The simplest form of $(\sqrt{5})^{-4} = \dots\dots\dots$
- 5 If $(x + 3)$ one factor of the expression : $x^2 + x - 6$, then the other factor is $\dots\dots\dots$

Remark

Some school exams
are modified to include
what was canceled
last year

2 Choose the correct answer from the given ones :

- 1 $4^5 + 4^5 + 4^5 + 4^5 = \dots\dots\dots$
(a) 4^{12} (b) 4^{20} (c) 4^{81} (d) 4^6
- 2 A man's age now is x years , then his age 7 years ago was $\dots\dots\dots$ years.
(a) $x - 7$ (b) $7x$ (c) $7 - x$ (d) $x + 7$
- 3 If the expression : $x^2 - 12x + k$ is a perfect square , then $k = \dots\dots\dots$
(a) 3 (b) 36 (c) 9 (d) 6
- 4 The S.S. of $x^2 + 4 = 0$ in \mathbb{R} is $\dots\dots\dots$
(a) $\{0\}$ (b) \emptyset (c) $\{0, 1\}$ (d) $\{1\}$
- 5 If $a^3 b^{-3} = 8$, then $\frac{a}{b} = \dots\dots\dots$
(a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2
- 6 If $a \in \mathbb{R}^*$, m , n are two non negative integers , then $a^m \times a^{-n} = a^{\dots\dots\dots}$
(a) $m - n$ (b) $m + n$ (c) $m n$ (d) $n - m$

3 Factorize each of the following :

- 1 $x^3 + 8$ 2 $x^2 - 5x + 6$ 3 $3x - 21 + a x - 7a$
- 4 $9x^2 - 4$ 5 $*x^4 + 64$

4 [a] Find in \mathbb{R} the S.S. of the following equation : $x^3 - 8x^2 + 12x = 0$

[b] 1 Find the positive real number which is if we add its square to three times it , the result will be 28

2 If $\left(\frac{2}{5}\right)^{2x+1} = \frac{8}{125}$, then find the value of x

5 [a] 1 Simplify to the simplest form : $\frac{6^{2n} \times 4^n}{2^{4n} \times 3^{2n}}$

2 If $x=3$, $y=\sqrt{2}$, find in the simplest form the value of : $\left(\frac{x}{y}\right)^{-2}$

[b] Selecting randomly a card out of cards numbered from 1 to 20 ,
Find the probability of getting a card carries :

1 A perfect square number. **2** A prime number.

2

Cairo Governorate

Heliopolis Educational Zone



Answer the following questions :

1 Choose the correct answer :

1 If $x^2 + kx + 25$ is a perfect square , then $k = \dots\dots\dots$

(a) 5 (b) 10 (c) ± 10 (d) ± 5

2 If $5^{x+2} = 1$, then $x = \dots\dots\dots$

(a) 1 (b) -2 (c) 2 (d) 5

3 If $x^2 - a = (x-3)(x+3)$, then $a = \dots\dots\dots$

(a) 2 (b) -2 (c) 9 (d) -9

4 The half of the number 2^8 is $\dots\dots\dots$

(a) 2^4 (b) 2^7 (c) 4 (d) -4

5 If $\left(\frac{2}{3}\right)^x = \frac{8}{27}$, then $x = \dots\dots\dots$

(a) 2 (b) 1 (c) 8 (d) 3

6 If $x^3 + 8 = (x+2)(x^2 + k + 4)$, then $k = \dots\dots\dots$

(a) $-2x$ (b) $4x$ (c) $2x$ (d) $-4x$

2 Complete the following :

1 The S.S. of $x^2 + 9 = 0$ in \mathbb{R} is $\dots\dots\dots$

2 The multiplicative inverse of the number $(\sqrt{3})^4$ is $\dots\dots\dots$

3 If $(x-4)$ is a factor of the expression : $x^2 - 5x + 4$, then the other factor is $\dots\dots\dots$

4 The probability of any event $A \in \dots\dots\dots$

5 $(\sqrt{5})^3 \div 5\sqrt{5} = \dots\dots\dots$

3 [a] Factorize each of the following :

1 $aX + bX + 5a + 5b$

2 $X^3 - 1$

3 $*X^4 + 4$

[b] Find in \mathbb{R} the S.S. of the equation : $X^2 + 9X + 18 = 0$

4 [a] If $3^{X-1} = 27$, find the value of : X

[b] Simplify to the simplest form : $\frac{(\sqrt{5})^7 \times (\sqrt{5})^3}{(\sqrt{5})^9 \times (\sqrt{2})^{-3}}$

5 [a] If $X = 3$, $y = \sqrt{3}$, find the value of : $\left(\frac{y}{X}\right)^{-2}$

[b] Simplify the following to the simplest form : $\frac{4^X \times 6^{2X}}{2^{4X} \times 3^{2X}}$

3

Cairo Governorate

El Wailly Directorate School
Mostakbal G.D.L.4



Answer the following questions :

1 Choose the correct answer :

1 If the expression : $X^2 + kX + 36$ is a perfect square , then $k = \dots\dots\dots$

(a) ± 6

(b) ± 8

(c) ± 12

(d) ± 18

2 If $X - y = 5$ and $X^2 + Xy + y^2 = 7$, then $X^3 - y^3 = \dots\dots\dots$

(a) 2

(b) 7

(c) 12

(d) 35

3 If $3^X = 2$, then $(27)^X = \dots\dots\dots$

(a) 8

(b) 9

(c) 27

(d) 54

4 If 2 is a solution for the equation : $X^2 - 5X + k = 0$, then $k = \dots\dots\dots$

(a) -3

(b) 3

(c) 6

(d) -6

5 $3^4 + 3^4 + 3^4 = \dots\dots\dots$

(a) 3^3

(b) 3^4

(c) 3^{12}

(d) 3^5

6 $\sqrt{100 - (-6)^2} = \dots\dots\dots$

(a) 4

(b) ± 8

(c) 8

(d) 16

2 Complete each of the following :

1 $9X^2 - 3X = 3X(3X - \dots\dots\dots)$

2 If $3^{X-2} = 1$, then $X = \dots\dots\dots$

3 If $X^2 - y^2 = 35$ and $X - y = 5$, then $X + y = \dots\dots\dots$

Algebra and Statistics

4 $\left(\frac{x}{y}\right)^{-3} = (\dots\dots\dots)^3$

5 The S.S. of the equation : $x^2 + 4 = 0$ in \mathbb{R} is

3 Factorize completely each of the following :

1 $9x^2 - 16$

2 $x^3 - 125$

3 $2x^2 + 7x - 4$

4 $x^3 + x^2 + x + 1$

4 [a] Find in \mathbb{R} the S.S. of the equation : $2x^3 = 18x$

[b] Simplify : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find its value at : $x = 1$

5 [a] If $3^{x-4} = 27$, then find the value of : x

[b] A rectangle whose area is 32 cm^2 and its length is twice its width find its length , width and perimeter.

4

Giza Governorate

National Institutes
Al-Horreya Language School

Answer the following questions :

1 Choose the correct answer :

1 The expression : $x^2 + kx + 36$ is a perfect square when k equals

(a) ± 6

(b) ± 8

(c) ± 12

(d) ± 18

2 The solution set of the equation : $x^2 - x = 0$ in \mathbb{R} is

(a) $\{0\}$

(b) $\{0, 1\}$

(c) \emptyset

(d) $\{1\}$

3 $(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})$ is

(a) 1

(b) $\sqrt{5}$

(c) $\sqrt{6}$

(d) 5

4 A bag contains 10 similar cards labeled from 1 to 10 , a card is drawn at random , then the probability that this card carries a number divisible by 5 is

(a) zero

(b) $\frac{1}{5}$

(c) $\frac{2}{5}$

(d) $\frac{1}{2}$

5 If $x + y = 3$ and $x^2 - xy + y^2 = 5$, then $x^3 + y^3 =$

(a) 15

(b) 25

(c) 8

(d) 7

6 The volume of a cube of side length 3 cm. equals cm^3

(a) 12

(b) 9

(c) 27

(d) 81

2 Complete :

- [1] $1 - \frac{1}{4} = \dots\dots\dots \%$
 [2] The solution set of the equation : $X^2 - 1 = 8$ where $X \in \mathbb{Z}^+$ is
 [3] If $7^{X-1} = 3^{X-1}$, then $X = \dots\dots\dots$
 [4] The probability of a certain event is
 [5] If $X + y = 4$, $X - y = 2$, then $X^2 - y^2 = \dots\dots\dots$

3 Factorize :

- [1] $X^3 - 1$ [2] $4X^2 - 9$ [3] $aX - 7a + 3X - 21$
 [4] $2X^2 - 7X + 3$ [5] $X^4 + 4y^4$

4 [a] Simplify to the simplest form : $\frac{(\sqrt{2})^5 \times (3)^{-2}}{3 \times (\sqrt{2})^9}$

[b] Find the S.S. for the following equation where $X \in \mathbb{R}$: $X^2 - 8X + 12 = 0$

5 [a] If $2^X = 16$, $3^{X+y} = 1$, find the values of : X , y

[b] A bag contains a number of similar balls some of them are red , 2 greens and 4 blues.
 If the probability of drawing a ball with green color is $\frac{1}{6}$,
 find the number of red balls.

5**Giza Governorate**

6 October Directorate

**Answer the following questions :****1 Choose the correct answer :**

- [1] $(X - 2)^2 = \dots\dots\dots$
 (a) $X^2 - 4$ (b) $(2 + X)^2$ (c) $X^2 + 4$ (d) $X^2 - 4X + 4$
 [2] $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$
 (a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}
 [3] If $kX^2 - 12X + 4$ is a perfect square , then $k = \dots\dots\dots$
 (a) -6 (b) -4 (c) -2 (d) 9
 [4] If $\frac{a}{b} = 1$, then $4a - 4b = \dots\dots\dots$
 (a) 8 (b) 4 (c) 1 (d) 0

Algebra and Statistics

5 If $x + y = 3$, $x^2 - xy + y^2 = 5$, then $x^3 + y^3 = \dots\dots\dots$

- (a) 15 (b) 25 (c) 8 (d) 7

6 If $3^x = 2$, then $27^x = \dots\dots\dots$

- (a) 9 (b) 4 (c) 8 (d) 1

2 Complete the following :

1 If $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

2 A bag contains 9 cards labeled by numbers from 1 to 9 , a card is drawn randomly , then the probability that this card carries an odd number = $\dots\dots\dots$

3 The S.S. of the equation : $x^2 + 1 = 0$ in \mathbb{R} is $\dots\dots\dots$

4 If $\frac{2x}{5} = 6$, then $x - 5 = \dots\dots\dots$

5 $(a - 2)(2a - 3) = \dots\dots\dots - 7a + \dots\dots\dots$

3 Factorize each of the following :

1 $3x^2 - 48$

2 $x^2 - 7x + 10$

3 $x^3 + 2x^2 - 4x - 8$

4 $2x^3 - 16y^3$

4 [a] Find the S.S. in \mathbb{R} :

1 $3^{2n-5} = 1$

2 $\left(\frac{2}{3}\right)^{2n} = \frac{81}{16}$

[b] A bag contains cards numbered from 1 to 20 and card drawn randomly
Find the probability of :

1 Getting a number divisible by 4

2 Getting a number multiple of 7

5 [a] Find the real number which if we added its square to its three times , it becomes 28

[b] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

6 Alexandria Governorate

Mid Educational Zone
Maths Supervision



Answer the following questions :

1 Complete each of the following :

1 The simplest form of : $(\sqrt{3})^3 \times (\sqrt{3})^5 = \dots\dots\dots$

2 If $x + y = 5$, $x - y = 3$, then $x^2 - y^2 = \dots\dots\dots$

- [3] If $x - 6 = 0$, then $x = \dots\dots\dots$
- [4] $y^3 - \dots\dots\dots = (y - 2)(y^2 + \dots\dots\dots + 4)$
- [5] $(\sqrt{7} + \sqrt{6})^8 (\sqrt{7} - \sqrt{6})^8 = \dots\dots\dots$

2 Choose the correct answer :

- [1] The expression : $x^2 + 8x + a$ is a perfect square when $a = \dots\dots\dots$
 (a) -4 (b) 4 (c) 8 (d) 16
- [2] A die is thrown once, then the probability of appearance 7 on the upper face is $\dots\dots\dots$
 (a) $\frac{-5}{6}$ (b) $\frac{1}{6}$ (c) 0 (d) $\frac{5}{6}$
- [3] If $(x + 3)^{\text{zero}} = 1$, then $x \in \dots\dots\dots$
 (a) $\mathbb{R} - \{3\}$ (b) $\mathbb{R} - \{-3\}$ (c) $\{3\}$ (d) \mathbb{R}
- [4] If the age of Kamal now is x years, then his age 3 years ago was $\dots\dots\dots$ years.
 (a) $x + 3$ (b) $3x$ (c) $x - 3$ (d) $6x$
- [5] The multiplicative inverse of 1 is $\dots\dots\dots$
 (a) 0 (b) 1 (c) 2 (d) 3
- [6] $3^3 + 3^3 + 3^3 = \dots\dots\dots$
 (a) 3^3 (b) 3^4 (c) 3^{12} (d) 3^{81}

3 [a] Factorize :

[1] $9x^2 - 4$

[2] $10y^2 - 7y - 12$

[3] $* 4x^4 + 1$

[b] Find the solution set in \mathbb{R} for : $2x^2 - 2x - 12 = 0$

4 [a] Find in the simplest form : $\frac{x^6 \times x^2}{x^3}$ where $x \neq 0$

[b] Factorize : $3x - 21 + a x - 7a$

**5 [a] A numbered card is selected randomly from a set of similar cards numbered from 1 to 15
Find the probability of getting a card carries :**

[1] A prime number.

[2] A number divisible by 3

[b] If $2^{x-2} = 32$, then find the value of : x

7

Alexandria Governorate

Educational Zone
Math's Supervision

Answer the following questions :

1 Complete the following :

1 If $X : 49 = 2 : 7$, then $X = \dots\dots\dots$

2 If $2^X = 8$, then $X = \dots\dots\dots$

3 The value of the expression : $3^5 + (\sqrt{3})^{10} - 2(3)^5 = \dots\dots\dots$

4 $6X^2 - 11X - 10 = (2X - \dots\dots\dots)(\dots\dots\dots + 2)$

5 1 , 4 , 9 , 16 , $\dots\dots\dots$ (in the same pattern)

2 Choose the correct answer from those given :

1 If $5X = 35$, then $2X + 1 = \dots\dots\dots$

(a) 7

(b) 8

(c) 15

(d) 71

2 If $5^X = 4$, then $5^{X-1} = \dots\dots\dots$

(a) 1.25

(b) 0.8

(c) 0.125

(d) 0.08

3 If $X^2 - y^2 = 16$, $y - X = 2$, then $X + y = \dots\dots\dots$

(a) 4

(b) 8

(c) -8

(d) 2

4 A regular die is thrown and observed the upper face , then the probability of appearance a number divisible by 3 is $\dots\dots\dots$

(a) $\frac{1}{4}$

(b) $\frac{1}{3}$

(c) $\frac{1}{2}$

(d) $\frac{3}{4}$

5 If the expression : $X^2 + 14X + b$ is a perfect square , then $b = \dots\dots\dots$

(a) 2

(b) 7

(c) 14

(d) 49

6 If $3^X + 3^X + 3^X = 1$, then $X = \dots\dots\dots$

(a) -1

(b) 0

(c) $\frac{1}{3}$

(d) 1

3 [a] A bag contain a number of similar balls , some of them are red , 2 greens , 4 blues. If the probability of drawing a ball with green color is $\frac{1}{6}$ Find the number of red balls.

[b] Factorize each of the following expression :

1 $2X^2 + 7X + 3$

2 $X^2 - 5X$

4 [a] Find the S.S. for the following equation where $X \in \mathbb{R} : X^2 - 8X + 12 = 0$

[b] Simplify to the simplest form : $\frac{(\sqrt{2})^5 \times (3)^{-2}}{3 \times (\sqrt{2})^9}$

- 5 [a] Find the dimensions of a rectangle whose length is 4 cm. more than its width and whose area is 21 cm^2
- [b] If $\frac{8^x \times 9^x}{18^x} = 64$ find the value of 4^{-x}

8

El-Kalyoubia Governorate

Mathe Supervisor



Answer the following questions :

- 1 Choose the correct answer :

- 1 $\mathbb{Z} - \mathbb{Z}^- = \dots\dots\dots$
- (a) \mathbb{Z}^+ (b) \mathbb{N} (c) \emptyset (d) $\{0\}$
- 2 The volume of the cube of side length 3 cm. equals $\dots\dots\dots \text{cm}^3$
- (a) 9 (b) 12 (c) 27 (d) 81
- 3 The expression : $x^2 + 4x + a$ is a perfect square when $a = \dots\dots\dots$
- (a) 3 (b) 4 (c) 8 (d) 16
- 4 The S.S. of the equation : $x^2 - x = 0$ is $\dots\dots\dots$ in \mathbb{R}
- (a) $\{0\}$ (b) \emptyset (c) $\{0, 1\}$ (d) $\{1\}$
- 5 If $(x - 1)$ is one factor of the expression : $x^2 - 4x + 3$, then the other factor is $\dots\dots\dots$
- (a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - y$
- 6 If $\left(\frac{5}{3}\right)^x = \left(\frac{3}{5}\right)^2$, then $x = \dots\dots\dots$
- (a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

- 2 Complete :

- 1 If $7^{x-1} = 3^{x-1}$, then $x = \dots\dots\dots$
- 2 A bag contains 9 cards labled by numbers from 1 to 9, a card is drawn randomly, then the probability that the card carries an odd number is $\dots\dots\dots$
- 3 $a^{-4} + 1 = a^{-4} (\dots\dots\dots + \dots\dots\dots)$ where $a \neq 0$
- 4 $1 - \frac{3}{4} = \dots\dots\dots$
- 5 $4^3 + 4^3 + 4^3 + 4^3 = 4^{\dots\dots\dots}$

- 3 [a] Factorize :

1 $x^2 - y^2$

2 $y^3 + 8$

- [b] Find the S.S. of the following equation in \mathbb{R} : $x^2 - x - 6 = 0$

Algebra and Statistics

4 [a] Factorize :

[1] $a^2 X - 7a + 3X - 21$

[2] $X^2 - 5X$

[b] If $3^X = 27$, $4^{X+y} = 1$, find the value of : X , y 5 [a] Find in the simplest form : $\frac{4^{X+1} \times 9^{2-X}}{(6)^{2X}}$, then calculate the result when $X = 1$

[b] If one digit of the number 37450 chosen at random , find the probability that the chosen digit is an even number.

9 El-Monofia Governorate

Kwana Educational Directorate
Mathematics Supervision

Answer the following questions : (Calculator is premitted)

1 Choose the correct answer from those given :

[1] $0.002 \times 0.05 = \dots\dots\dots$

(a) 10^{-5}

(b) 10^{-4}

(c) 10^4

(d) 10^5

[2] The expression : $(X - 2y)(X^2 + 2Xy + 4y^2)$ equals $\dots\dots\dots$

(a) $X^3 - 2y^3$

(b) $X^3 - 8y^3$

(c) $X^3 + 8y^3$

(d) $X^3 + 18y^3$

[3] The value of the expression : $5^{20} + 5^{21}$ equals $\dots\dots\dots$

(a) 5×5^{40}

(b) 5×5^{41}

(c) 6×5^{20}

(d) 6×5^{21}

[4] The value of the expression : $2^5 + (\sqrt{2})^{10}$ equals $\dots\dots\dots$

(a) 2^6

(b) 2^{10}

(c) $(\sqrt{5})^{15}$

(d) $(\sqrt{2})^{20}$

[5] If the probability of choosing a boy from a class of 40 students is 0.375 , then the number of girls is $\dots\dots\dots$

(a) 35

(b) 25

(c) 20

(d) 15

[6] The solution set of the equation : $(X - 1)^2 = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) $\{-1\}$

(b) $\{1\}$

(c) $\{-1, 1\}$

(d) $\{2\}$

2 Complete :

[1] The expression : $X^2 - 2X + k$ is perfect square when $k = \dots\dots\dots$ [2] If $3^X \times 2^{-X} = 1.5$, then $X = \dots\dots\dots$ [3] If $a^2 + b^2 = 7$, $a b = 3$, then $(a - b)^2 = \dots\dots\dots$ [4] $X(y - z) + L(y - z) = (y - z)(\dots\dots\dots)$

[5] $\left(\frac{\sqrt{3}}{9}\right)^{-1} = (\sqrt{3})^{\dots\dots\dots}$

3 [a] An integer is added to its multiplicative inverse the result equals 2 Find the number.

[b] Factorize each of the following :

1 $3x^2 - 15x + 12$

2 $\frac{1}{3}x^3 - 9$

3 $*x^4 + 9x^2 + 81$

4 [a] Simplify : $\frac{4^{x+1} \times 9^{2-x}}{(6)^{2x}}$, then calculate its value at $x = 1$

[b] If $x = \frac{\sqrt{3}}{2}$, $y = \frac{1}{\sqrt{3}} = z = \frac{\sqrt{2}}{2}$, find the value : $x^2 + (xz)^2 \times y^2$

5 [a] A set of cards numbered from 0 to 10 , if a card is drawn randomly , find the probability of each :

1 Drawing a card carries odd number.

2 Drawing a card carries a number divisible by 5

[b] Factorize each of the following :

1 $a^2x - 7a + 3x - 21$

2 $9x^2 - 25$

10 El-Gharbia Governorate

Official Languages Schools
The Central Maths Supervision



Answer the following questions :

1 Choose the correct answer :

1 If $x^2 - 2x - k = (x + 3)(x - 5)$, then $k = \dots\dots\dots$

(a) - 2

(b) - 8

(c) 15

(d) 2

2 The expression : $x^2 + 14x + b$ is a perfect square , than $b = \dots\dots\dots$

(a) 2

(b) 7

(c) 14

(d) 49

3 The solution set of the equation : $x^2 + 9 = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) {3}

(b) {-3 , 3}

(c) {-3}

(d) \emptyset

4 If $3^{2+x} = 4^{x+2}$, then $7^{x+2} = \dots\dots\dots$

(a) 7

(b) - 7

(c) - 2

(d) 1

5 In a mixed school there are 320 students. If the probability that the ideal student is a boy equals 0.6 , then the number of girls of the school equals $\dots\dots\dots$ girls.

(a) 256

(b) 192

(c) 128

(d) 196

6 If $\frac{a}{b} = 1$, then $4a - 4b = \dots\dots\dots$

(a) 8

(b) 4

(c) 0

(d) 1

- 1** The solution set of $\frac{x}{4} = \frac{25}{x}$ in \mathbb{R} is
2 If $x = (\sqrt{5} - 2)^7$, $y = (\sqrt{5} + 2)^7$, then $xy =$
3 If $y^3 - a = (y - 2)(y^2 + 2y + 4)$, then $a =$
4 If $(x + 1)$ is one of the factors of the expression : $5x^2 - 2x - 7$, then the other factor is
5 $1 - \frac{1}{4} =$ %

3 Factorize each of the following expressions completely :

- ① $x^2 + 8x + 15$ ② $x^3 - 27$
 ③ $2x^2 + 7x + 3$ ④ $ax - 7a + 3x - 21$

- 4** [a] If $\frac{8^x \times 9^x}{18^x} = 64$, find the value of : 4^{-x}

- [b] Find the solution set of the following equation where $x \in \mathbb{R} : x^2 - 8x + 12 = 0$**

- 5** [a] **1** Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

- 2** Find the rational number whose four times its square equals 81

- [b]** A box contains 3 red balls , 4 yellow balls and 5 green balls.

A ball is drawn randomly from the box. Find the probability of the drawn ball is :

- 1** Yellow **2** Green **3** Not red

11 El-Dakahlia Governorate

**Directorate of Education
Mathe Supervizion**



Answer the following questions :

- 1 Choose the correct answer :**

- 1** If $x + y = 8$ and $x^2 - y^2 = 12$, then $x - y = \dots\dots\dots$
- (a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) 4 (d) 20
- 2** The solution set of the equation : $x^2 - 7 = 9$ in \mathbb{R} is $\dots\dots\dots$
- (a) $\{4, -4\}$ (b) $\{4\}$ (c) \emptyset (d) $\{16\}$
- 3** $\frac{3^x \times 3^x \times 3^x}{3^x + 3^x + 3^x} = 1$, then $x = \dots\dots\dots$
- (a) 2 (b) 3 (c) $\frac{1}{2}$ (d) $-\frac{1}{3}$

4 If $(x^2 - 10x + a)$ is a perfect square , then $a = \dots\dots\dots$

(a) - 5

(b) 5

(c) 25

(d) ± 25

5 A cube of edge length = 6 cm. , then its volume = $\dots\dots\dots \text{cm}^3$

(a) 12

(b) 24

(c) 36

(d) 216

6 If $2^x = 5$, then $8^x = \dots\dots\dots$

(a) 125

(b) 25

(c) 15

(d) 20

2 Complete :

1 If $7^{x+5} = 3^{x+5}$, then $x = \dots\dots\dots$

2 $1 - \frac{2}{5} = \dots\dots\dots \%$

3 $x^3 - \dots\dots\dots = (x - 2)(x^2 \dots\dots\dots + 4)$

4 If $x^{-2} + 1 = x^{-2} (\dots\dots\dots + \dots\dots\dots)$

5 The probability of a certain event = $\dots\dots\dots$

3 Factorize completely each of the following :

1 $2x^2 - 5x + 3$

2 $x^3 + x^2 + 3x + 3$

3 $6x^2 - 24$

4 $8x^3 + 1$

4 [a] Find the solution set in \mathbb{R} : $x^2 = 9x - 14$

[b] Find the value of n such that : $\frac{9^{n+1} \times 8^n}{6^{2n+2}} = 16$

5 [a] If $3^x = 81$ and $4^{x+y} = 1$, then find the value of : x, y

[b] A box contains a number of similar balls 8 of them are red balls and the others are white , if the probability of the chosen red ball is $\frac{2}{3}$

Find the number of white balls.

12

Ismailia Governorate

Directorate of Education
Math's Supervision



Answer the following questions :

1 Choose the correct answer :

1 The probability of impossible event = $\dots\dots\dots$

(a) 1

(b) 0

(c) $\frac{1}{2}$

(d) \emptyset

2 If $3^{x-2} = 1$, then $x = \dots\dots\dots$

(a) 0

(b) 1

(c) 2

(d) 3

Algebra and Statistics

3 $\{2, 3, 6\} \cap \{3, 4, 5\} = \dots\dots\dots$

(a) $\{2\}$

(b) $\{4\}$

(c) $\{6\}$

(d) $\{3\}$

4 If $4x^2 + 12x + m$ is a perfect square, then $m = \dots\dots\dots$

(a) 9

(b) 3

(c) 4

(d) 16

5 $3^x + 3^x + 3^x = 3^{\dots\dots\dots}$

(a) $3x$

(b) x^3

(c) $x + 1$

(d) x

6 half of $2^6 = \dots\dots\dots$

(a) 2^3

(b) 2^5

(c) 2^{12}

(d) 2^4

2 Complete :

1 If $4^x = 7$, then $4^{x+1} = \dots\dots\dots$

2 $12 - 2 \times 4 \div (9 - 5) = \dots\dots\dots$

3 $\left(\frac{3}{4}\right)^x = \frac{27}{64}$, then $x = \dots\dots\dots$

4 The S.S. in \mathbb{R} of : $x^2 + 4 = 0$ is $\dots\dots\dots$

5 $x(a+b) - y(a+b) = (a+b)(\dots\dots\dots)$

3 [a] Factorize each of the following :

1 $x^2 - 11x + 18$

2 $x^3 + 27$

3 $* 4x^4 + y^4$

[b] If $2^x = 32$ and $3^{y+1} = 27$, find the value of : $x - y$

4 [a] If $\frac{8^x \times 9^x}{(18)^x} = 64$, find the value of x , then find the value of 2^x

[b] Find the S.S. in \mathbb{R} of : $x^2 + 4x - 12 = 0$

5 [a] Factorize :

1 $4x^2 - 9$

2 $5x + ay + 5y + ax$

[b] A box contains 5 red balls, 3 white balls and 3 blue balls. If a ball selected randomly, find the probability of getting :

1 A red ball

2 A red or a blue ball

3 Not a red ball

13

El-Beheira Governorate

Edko Directorate
Maths Supervision

Answer the following questions :

1 Choose the correct answer from the given ones :

1 $(X-2)^2 = \dots\dots\dots$

(a) $X^2 + 4$

(b) $X^2 - 4$

(c) $X^2 + 4X + 4$

(d) $X^2 - 4X + 4$

2 $5^X = 25$, then $X = \dots\dots\dots$

(a) 1

(b) 2

(c) 3

(d) 4

3 The S.S. of : $X^2 + 64 = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) $\{4\}$

(b) \emptyset

(c) $\{-4\}$

(d) $\{4, -4\}$

4 If $9^{X+1} = 2^{X+1}$, then X is $\dots\dots\dots$

(a) 1

(b) -1

(c) 0

(d) 2

5 $3^X \times 3^X \times 3^X = \dots\dots\dots$

(a) $3^3 X$

(b) 3^{X+1}

(c) 3^{X+3}

(d) $9^3 X$

6 If the expression : $X^2 + aX + 25$ is perfect square , then $a = \dots\dots\dots$

(a) 5

(b) 10

(c) 8

(d) 18

2 Complete each of the following :

1 If $X + y = 2$, $X - y = 8$, then $X^2 - y^2 = \dots\dots\dots$

2 $X^3 - 27 = (\dots\dots\dots - \dots\dots\dots) (X^2 + 3X + 9)$

3 If $6^{n-2} = 1$, then $n = \dots\dots\dots$

4 Third the number 3^{20} is $\dots\dots\dots$

5 The number $(\sqrt{2})^{-2}$ in the simplest form is $\dots\dots\dots$

3 [a] If simplify : $\frac{(4)^{X+1} \times (9)^{2-X}}{(6)^{2X}}$, then find the value answer when $X = 1$

[b] Find the S.S. in \mathbb{Q} : $X^2 - X = 12$

4 [a] Factorize :

1 $3X^2 + 7X + 2$

2 $aX - 7a + 3X - 21$

[b] If $3^X = 27$, $4^{X+y} = 1$, find the value of : X and y

5 [a] The length of rectangle more than its width by 4 cm. and its area 12 cm^2 , find the dimensions of the rectangle.

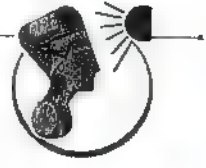
[b] A card is chosen randomly from ten cards numbered from 5 to 14 ,
What is the probability that the chosen card is :

[1] An even number ?

[2] A prime number ?

14 El-Menia Governorate

El-Menia Educational Directorate
Minia Kawmia Language School



Answer the following questions :

1 Complete the following :

- [1] The solution set of the equation : $x^2 - 1 = 8$, where $x \in \mathbb{Z}^+$ is
- [2] If $3^{x-4} = 1$, then $x =$
- [3] The S.S. of the equation : $x^2 - 25 = 0$ in \mathbb{R} is
- [4] If $\left(\frac{2}{3}\right)^x = \frac{3}{2}$, then $x =$
- [5] The volume of a cube of side length 3 cm. equals cm^3

2 Choose the correct answer :

- [1] The S.S. of the equation : $x(x-2) = 0$ in \mathbb{R} is
 (a) $\{0\}$ (b) $\{2\}$ (c) $\{0, 2\}$ (d) $\{0, -2\}$
- [2] If $x^3 y^{-3} = 8$, then $\frac{x}{y} =$
 (a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2
- [3] The expression : $x^2 + kx + 36$ is a perfect square when k equals
 (a) ± 6 (b) ± 8 (c) ± 12 (d) ± 18
- [4] $4^3 + 4^3 + 4^3 + 4^3 =$
 (a) 4^{12} (b) 16^{12} (c) 16^2 (d) 16^3
- [5] If the probability of success of a student is 0.75 , then the probability of his failure is
 (a) 0.20 (b) 0.25 (c) 0.30 (d) 0.35
- [6] If $(x-1)$ is one factor of expression : $x^2 - 4x + 3$, then the other factor is
 (a) $x+3$ (b) $x+1$ (c) $x-3$ (d) $x-y$

3 [a] If $\frac{8^x \times 9^x}{18^x} = 64$ find : x

[b] Find the S.S. of the equation in \mathbb{R} : $x^2 - 1 = 8$

4 Factorize each of the following expressions :

1 $a^2x - 7a + 3x - 21$

2 $x^3 + 8$

3 $x^2 - x - 6$

4 $4x^2 - 9$

5 $x^4 + 324$

5 [a] If $(3)^{x-2} = 9$, then find the value of : x

[b] A colored marble is drawn randomly out of a box containing 12 red marbles , 18 white marbles and 20 blue marbles.

Find the probability of selecting :

1 A white marble.

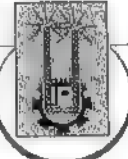
2 A yellow marble.

3 A red or blue marble.

4 A non red marble.

15 Aswan Governorate

Aswan Educational Directorate
Amr Farid distinct official Language School



Answer the following questions :

1 Complete each of the following :

1 $\left(\frac{-1}{\sqrt{2}}\right)^6 = \dots\dots\dots$

2 If $x + y = 5$ and $x - y = 4$, then $x^2 - y^2 = \dots\dots\dots$

3 A regular die is thrown once and observed the upper face , then the probability of appearance number divisible by 5 is $\dots\dots\dots$

4 $x^3 - \dots\dots\dots = (x - 2)(\dots\dots\dots + 2x + 4)$

5 $\sqrt[3]{0.08 \times 0.1} = \dots\dots\dots$

2 Choose the correct answer from those given :

1 The S.S. of the equation : $x^2 - x = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) $\{0\}$

(b) \emptyset

(c) $\{0, 1\}$

(d) $\{1\}$

2 The probability of the certain events is $\dots\dots\dots$

(a) $\frac{1}{2}$

(b) 0

(c) \emptyset

(d) 1

3 If $5^x = 4$, then 5^{x-1} equals $\dots\dots\dots$

(a) 1.25

(b) 0.8

(c) 0.125

(d) 0.08

4 If $3^x = 5$ and $3^y = 4$, then $3^{x+y} = \dots\dots\dots$

(a) 15

(b) 20

(c) 9

(d) 1

Algebra and Statistics

5 The value of : $2^5 + (\sqrt{2})^{10}$ is

(a) 2^6

(b) 2^{10}

(c) $(\sqrt{2})^{15}$

(d) $(\sqrt{2})^{20}$

6 $(-1)^9 + (-1)^8 = \dots\dots\dots$

(a) 2

(b) 0

(c) 1

(d) -1

3 [a] If $\left(\frac{2}{5}\right)^{2x-1} = \frac{8}{125}$, find : x

[b] Find the solution set of the following equation where $x \in \mathbb{R}$: $x^2 - 6x = 0$

4 [a] Find in the simplest form the value of : $\frac{(\sqrt{3})^{-5} \times (\sqrt{3})^{-4}}{(\sqrt{3})^{-10}}$

[b] A box contains a number of similar balls , 2 of them are green , 4 are blue and the rest are red , at choosing one randomly , and the probability of the drawn ball with green color is $\frac{1}{6}$, then find the number of red balls.

5 Factorize each of the following expressions :

1 $x^2 + 8x + 15$

2 $25x^2 - y^2$

3 $x^3 - 8$

4 $18y^2 - 12y + 2$

5 $* 81x^4 + 4z^4$

Some Schools Examinations on Algebra and Statistics

1 **Cairo Governorate**

East Naser City Zone
Manaret Heliopolis School



Answer the following questions :

1 Complete each of the following :

- (1) The probability of the impossible event is
- (2) $a x + b y + b x + a y = \dots\dots\dots$
- (3) Fifth the number 5^{20} is
- (4) If $3^x = 5$, then $(27)^x = \dots\dots\dots$
- (5) The solution set of the equation : $x^2 + 1 = 0$ in \mathbb{R} is

2 Choose the correct answer :

- (1) If the probability that a student succeeds in a subject is 0.8 , then the probability of his failure is
 (a) 0 (b) 1 (c) 0.2 (d) 0.8
- (2) If $6^x = 7$, then $6^{x+1} = \dots\dots\dots$
 (a) 42 (b) $\frac{7}{6}$ (c) 1 (d) 6
- (3) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$
 (a) 4^{12} (b) 4^9 (c) 4^4 (d) 4^{81}
- (4) The solution set of equation : $x^2 - 5x + 4 = 0$ in \mathbb{R} is
 (a) $\{1, 4\}$ (b) $\{2, -2\}$ (c) \emptyset (d) $\{1\}$
- (5) A die is thrown then the probability of appearance number 7 is
 (a) 0 (b) 1 (c) $\frac{2}{5}$ (d) $\frac{1}{6}$
- (6) * If $x^2 + kx + 25$ is a perfect square , then $k = \dots\dots\dots$
 (a) 5 (b) 10 (c) ± 10 (d) ± 5

3 [a] Factorize each of the following completely :

- (1) $* 3a^2 + 7a + 2$
- (2) $5l + 10m + al + 2am$

[b] Find the value of the x in each of the following :

- (1) $(x-3)^7 = 128$
- (2) $4^{2x-1} = 1024$
- (3) $5^{x-7} = 1$

4 [a] Simplify each of the following :

- (1)
$$\frac{(\sqrt{3})^{-4} \times (\sqrt{2})^{-5} \times (\sqrt{3})^{-3}}{(\sqrt{3})^{-9} \times (\sqrt{2})^{-7}}$$
- (2)
$$\left(\frac{2\sqrt{3}}{3\sqrt{2}}\right)^4$$

[b] A bag contains balls labeled by the numbers from 1 to 15 if a ball is drawn at random
Find the probability that the drawn ball carries each of the following :

- (1) An even number. (2) A number divisible by 3. (3) A prime number.

5 [a] In producing 600 electric lamps , if the probability of the defected lamps is 0.05 ,
then find the number of the good lamps and also the number if the defected.

[b] Find in \mathbb{R} the solution set of each of the following :

- (1) $x^2 - 9 = 0$ (2) $x^2 = 5x$ (3) $3x = -x^2 - 2$

2

Cairo Governorate

Zetoun Educational Administration
Gomhouria language school



Answer the following questions :

1 Choose the correct answer :

- (1) If $6^x = 7$, then $6^{x+1} = \dots\dots\dots$
(a) 8 (b) 13 (c) 36 (d) 42
- (2) If the expression : $a x^2 + 12x + 9$ is a perfect square , then a = $\dots\dots\dots$
(a) 3 (b) 4 (c) 9 (d) 16
- (3) If $xy = 3$, $(x+y)^2 = 16$, then $x^2 + y^2 = \dots\dots\dots$
(a) 4 (b) 10 (c) 13 (d) 8
- (4) If a regular die is tossed once then the probability of appearing the number 7 = $\dots\dots\dots$
(a) $\frac{1}{7}$ (b) $\frac{1}{6}$ (c) 1 (d) 0
- (5) $3^{\text{zero}} + 3^{-1} - \left(\frac{1}{\sqrt{3}}\right)^2 = \dots\dots\dots$
(a) 3 (b) 1 (c) $\frac{1}{3}$ (d) 0
- (6) * If $x + y = 3$, $x^2 - xy + y^2 = 5$, then $x^3 + y^3 = \dots\dots\dots$
(a) 15 (b) 25 (c) 8 (d) 7

2 Complete each of the following :

- (1) If three times a number = 3^3 , then $\frac{2}{3}$ this number = $\dots\dots\dots$
- (2) If $x + y = 7$ and $a - 2b = 4$, then the numerical value of the expression :
 $a(x+y) - 2b(x+y) = \dots\dots\dots$
- (3) If $\left(\frac{2}{3}\right)^x = \frac{27}{8}$, then $x = \dots\dots\dots$

(4) A class has 50 students (boys and girls) , if the probability of choosing a girl randomly is 0.6 , then the number of boys =

(5) If $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

3 [a] Factorize each of the following completely :

(1) $* 9 - y^2$

(2) $4x^4 + 81y^4$

[b] If $2^{x-2} = \left(\frac{1}{2\sqrt{2}}\right)^2$ Find the value of : x

4 [a] Find in \mathbb{R} the S.S. of the equation : $3x^2 + 15x - 18 = 0$

[b] Simplify to the simplest form : $(3^{x-1} \times 2^{x+1}) \div 6^{x-1}$

5 [a] A positive real number , if its square is added to three times of it then the result equals 28 Find this number.

[b] A box has 15 regular balls , 3 of them are white , 9 of them are black , a ball is choosing randomly.

Find the probability of the drawn ball is :

(1) Black.

(2) Not white and not black.

3

Cairo Governorate

New Cairo Zone
Manor House Language School



Answer the following questions :

1 Complete each of the following :

(1) If $5^{x-2} = 1$, then $x = \dots\dots\dots$

(2) The S.S. of the equation : $x^2 - 16 = 0$ in \mathbb{R} is

(3) The number $(\sqrt{2})^{-4}$ in simplest form is

(4) Bag contains 5 white balls , 2 black balls and 3 blue balls , if a ball was taken randomly , then the probability of this ball is black or white is

(5) If $x = (\sqrt{5} - 2)^7$ and $y = (\sqrt{5} + 2)^7$, then $xy = \dots\dots\dots$

2 Choose the correct answer :

(1) If $(x-2)^0 = 1$, then $x \neq \dots\dots\dots$

(a) 3

(b) 2

(c) 1

(d) -3

(2) If $5^x = 4$, then $5^{x-1} = \dots\dots\dots$

(a) 1.25

(b) 0.8

(c) 0.125

(d) 0.08

(3) If $x = \frac{\sqrt{8}}{\sqrt{2}}$, then $x^{-1} = \dots\dots\dots$

(a) 2

(b) -2

(c) $\frac{1}{2}$

(d) $-\frac{1}{2}$

(4) The probability of occurrence of an event is 80% , then the probability of non-occurrence of this event is

(a) 0.2

(b) 0.3

(c) 0.4

(d) 0.8

(5) $\left(\frac{\sqrt{5}}{3}\right)^{-2} = \dots\dots\dots$

(a) $\frac{9}{5}$

(b) $-\frac{9}{5}$

(c) $-\frac{5}{9}$

(d) $\frac{5}{9}$

(6) * If the expression : $x^2 + 7x + a$ can be factorized , then a may be equal to

(a) 8

(b) 10

(c) 18

(d) 49

3 Find the S.S. of the following equations in \mathbb{R} :

[a] (1) $x^2 - 7x + 10 = 0$

(2) $x^3 - 9x = 0$

[b] If $a = \sqrt[3]{3}$, $b = \frac{1}{\sqrt[3]{3}}$, find the value of : $a^4 + b^{-4}$

4 [a] A numbered card is selected randomly from a set of similar cards numbered from 1 to 30 , Find the probability of getting a card that carries :

(1) A number divisible by 4

(2) A number divisible by 6

(3) A number divisible by 4 and 6

[b] Factorize the following :

(1) $x^4 + 64y^4$

(2) $a^3 - ab^2 - a^2b + b^3$

(3) * $8x^3 - 125$

5 [a] If the length of a rectangle is more than its width by 5 cm. and if its area 36 cm. find its perimeter.

[b] If $\frac{9^x \times 8^x}{18^x} = 64$, find the value of : x

4

Giza Governorate

Dokki District

Modern Narmar language school



Answer the following questions :

1 Complete each of the following :

(1) If $x = 3$ is a solution of the equation : $x^2 + 2x + k = 0$, then $k = \dots\dots\dots$

(2) The solution set of the equation : $x^2 + 4 = 0$ in \mathbb{R} is

- (3) The quadratic equation : $(X + \dots)(3X - 2) = 0$ is equivalent to $\dots + \dots - 10 = 0$
- (4) If $3^{X-2} = 27$, then $X = \dots$
- (5) There are 21 boys and 15 girls in a classroom , if a student is chosen at random , then the probability that the student is a boy = \dots

2] Choose the correct answer :

- (1) The solution set in \mathbb{R} of the equation : $(X - 1)^2 = 0$ is
 (a) $\{0\}$ (b) $\{-1\}$ (c) $\{1, -1\}$ (d) $\{1\}$
- (2) If $3^X + 3^X + 3^X = 1$, then $X = \dots$
 (a) -1 (b) 0 (c) 1 (d) 2
- (3) 3^{-2} equals
 (a) 9 (b) $\frac{1}{9}$ (c) $-\frac{1}{9}$ (d) -9
- (4) $2^{12} \times 3^{12} = \dots$
 (a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}
- (5) A die is thrown once , then the probability that 5 appears is
 (a) $-\frac{5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$
- (6) * The expression : $X^2 + aX + 2$ can be factorized , then $a = \dots$
 (a) 1 (b) 2 (c) 3 (d) 4

3] [a] Solve in \mathbb{R} the equations :

(1) $X^2 - X - 12 = 0$

(2) $X(X - 2) - 2(2 - X) = 0$

- [b] The length of a rectangle is more than its width by 5 cm. If its area is 36 cm^2 , then find its dimensions and its perimeter.

- 4] [a] Simplify :** $\frac{4^{X+1} \times 9^{2-X}}{6^{2X}}$, then find the value of the answer when $X = 2$

- [b] If the sum of the square of a positive number and three times this number is 28 , then find the value of this number.

- 5] [a] Find the value of X if : $3^{2X-3} = 243$**

- [b] A bag contains 20 balls numbered from 1 to 20 , if one ball is drawn at random , then find the probability that :

- (1) The number is a multiple of 4
 (2) The number is less than or equal 7



Answer the following questions :

1 Choose the correct answer :

- (1) The S.S. of the equation : $x^2 - 1 = 8$ in \mathbb{R} is
 (a) \emptyset (b) $\{3\}$ (c) $\{-3\}$ (d) $\{-3, 3\}$
- (2) If $6^x = 7$, then $6^{x+1} = \dots\dots\dots$
 (a) 8 (b) 13 (c) 36 (d) 42
- (3) If a die is thrown once, then the probability that the number 5 appears is
 (a) $\frac{5}{6}$ (b) $\frac{1}{2}$ (c) $\frac{1}{6}$ (d) $\frac{0}{6}$
- (4) If $7^{x-3} = 5^{x-3}$, then $x = \dots\dots\dots$
 (a) 5 (b) 7 (c) 3 (d) 0
- (5) $2^{12} \times 3^{12} = \dots\dots\dots$
 (a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}
- (6) * If the expression : $x^2 + 14x + b$ is a perfect square, then $b = \dots\dots\dots$
 (a) 2 (b) 7 (c) 14 (d) 49

2 Complete each of the following :

- (1) $\left(\frac{3}{5}\right)^x = \frac{27}{125}$, then $x = \dots\dots\dots$
- (2) The solution set of the equation : $x^2 + 9 = 0$ in \mathbb{R} is
- (3) If the probability that a student failed is 7%, then the probability that this student succeeded is
- (4) If $3^x = 81$, then $x = \dots\dots\dots$
- (5) The age of a man now x years, then his age 7 years ago is years.

3 [a] Factorize each of the following :

(1) * $8x^2 - 50$

(2) $x^4 + 4y^4$

[b] If a real number is added to its square the result will be 12, find this number.

4 [a] Find in \mathbb{Q} the solution set of :

(1) $x^2 - x = 12$

(2) $4x^2 - 25 = 0$

[b] If $\frac{8^x \times 9^x}{18^x} = 64$, find : x

- 5** [a] A box contains a similar balls , 8 white balls , 5 red balls and 7 black balls , if we choose a ball , then find the probability that the ball is :

(1) White.

(2) Black or red.

[b] Find the value of x if : $2^{x-2} = 16$

6 Alexandria Governorate

Eastern Educational Zone
Taymour English School



Answer the following questions :

- 1** Complete the following :

(1) If $a = \sqrt{3}$, $b = \sqrt{2}$, then the value of $\frac{a^4}{b^4} = \dots\dots\dots$

(2) $\frac{(10)^2 \times (10)^{-7}}{(0.1)^2 \times 0.001} = \dots\dots\dots$

(3) A numbered card is selected at random from a set of similar cards numbered from 1 to 24 , the probability of getting a card carries a multiple of 4 is

(4) $(9a^2 - 4b^2) = (3a - \dots\dots\dots)(\dots\dots\dots + 2b)$

(5) $(x + 3y)^2 = x^2 + \dots\dots\dots + 9y^2$

- 2** Choose the correct answer :

(1) If $(x + 3)$ is a factor of the expression : $x^2 + x - 6$, then the other factor is

(a) $(x - 2)$

(b) $(x - 3)$

(c) $(x + 2)$

(d) $(x + 6)$

(2) If $3^x = 27$, $4^{x+y} = 1$, then $y = \dots\dots\dots$

(a) 0

(b) 3

(c) - 3

(d) 1

(3) The S.S. of the equation : $x^2 - 3 = 0$ in \mathbb{R} is

(a) $\{3, -3\}$

(b) $\{\sqrt{3}\}$

(c) 9

(d) $\{-\sqrt{3}, \sqrt{3}\}$

(4) $(\sqrt{3} + \sqrt{2})^9 (\sqrt{3} - \sqrt{2})^9 = \dots\dots\dots$

(a) 1

(b) $\sqrt{5}$

(c) $\sqrt{6}$

(d) 5

(5) Which of the following may be equal the probability of an event

(a) - 0.73

(b) 1.23

(c) 79 %

(d) $\frac{4}{3}$

(6) * If $x^3 + 27 = (x + 3)(x^2 + kx + 9)$, then $k = \dots\dots\dots$

(a) - 6x

(b) - 3x

(c) 3x

(d) 6x

3 [a] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] Find the value of x : $\left(\frac{2}{5}\right)^{2x+1} = \frac{8}{125}$

4 Factorize each of the following :

(1) $(x+2)^3 - 4x - 8$

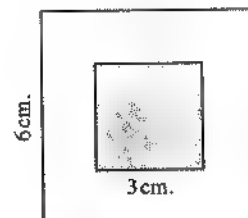
(2) $a^2 + 2ab + b^2 - c^2$

(3) $* 5a^2 - 18a + 16$

(4) $xy + 5y + 7x + 35$

5 [a] Find the S.S. in \mathbb{R} : $2x^3 = 18x$

[b] A person shoot at a picture in the opposite figure then find the probability of hitting the shaded part.

**7 Alexandria Governorate**

Mid Zone
Supervision of Math



Answer the following questions :

1 Complete each of the following :

(1) The simplest form of the expression $2^3 \times 2^2 \div 4^3 = \dots\dots\dots$

(2) The solution set of the equation : $x^2 + 4 = 0$ in \mathbb{R} is $\dots\dots\dots$

(3) If $x - 5 = 0$, then $x = \dots\dots\dots$

(4) If $2^x = 3$, then $8^x = \dots\dots\dots$

(5) Subtracting $2x$ from $5x$ gives $\dots\dots\dots$

2 Choose the correct answer :

(1) We can use factorizing by completing the square to factorize $\dots\dots\dots$

(a) $x^2 - y^2$

(b) $x^3 - y^3$

(c) $x^3 + y^3$

(d) $x^4 + y^4$

(2) A die is thrown once , then the probability of appearance 5 on the upper face is $\dots\dots\dots$

(a) $\frac{-5}{6}$

(b) $\frac{1}{6}$

(c) 0

(d) $\frac{5}{6}$

(3) If $\left(\frac{5}{3}\right)^x = \frac{27}{125}$, then $x = \dots\dots\dots$

(a) -5

(b) -3

(c) 3

(d) 5

(4) If the age of kamal now is x year , then his age after 5 years is $\dots\dots\dots$

(a) $x + 5$

(b) $5x$

(c) $x - 5$

(d) $10x$

(5) The number has no multiplicative inverse is $\dots\dots\dots$

(a) 0

(b) 1

(c) 2

(d) 3

(6) $* x^2 - 4 = \dots\dots\dots$

(a) $4 - x^2$

(b) $(x-2)^2$

(c) $(x-2)(x+2)$

(d) $(x-4)^2$

3 [a] Factorize : (1) $x^4 + 4l^4$ (2) $\ast \frac{1}{8} a^3 - 8b^3$

[b] Find the solution set in \mathbb{R} for : $6x^2 - x = 22$

4 [a] Find in the simplest form : $\frac{(\sqrt{3})^5 \times (\sqrt{3})^3}{(\sqrt{3})^4}$

[b] Find the positive real number which if added to its square the result will be 12

5 [a] A numbered card is selected randomly from a set of similar cards numbered from 1 to 24 , find the probability of getting a card carries :

(1) Odd number.

(2) A number divisible by 3

[b] If $3^{x-4} = 1$, then find the value of : x

8 El-Kalyoubia Governorate

Supervision of Math



Answer the following questions :

1 Choose the correct answer :

(1) If $2^x = 5$, then $8^x = \dots\dots\dots$

(a) 40

(b) 10

(c) 16

(d) 125

(2) If $\frac{x-5}{x-7} \in \mathbb{Q}$, then $x \neq \dots\dots\dots$

(a) 5

(b) -5

(c) 7

(d) -7

(3) The solution set of the equation : $x^2 - 5x - 6 = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) $\{2, 3\}$

(b) $\{2, 4\}$

(c) $\{1, -6\}$

(d) $\{-1, 6\}$

(4) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

(a) 4^3

(b) 4^4

(c) 4^{12}

(d) 4^{81}

(5) If $(x-5)^{\text{zero}} = 1$, then $x \in \dots\dots\dots$

(a) $\mathbb{R} - \{5\}$

(b) $\mathbb{R} - \{-5\}$

(c) $\{5\}$

(d) \mathbb{R}

(6) \ast If $x^2 - y^2 = 12$, $x - y = 3$, then $x + y = \dots\dots\dots$

(a) 3

(b) 4

(c) 12

(d) 15

2 Complete each of the following :

(1) $x(y+3) + z(y+3) = (\dots\dots\dots) (\dots\dots\dots)$

(2) 25 % of L.E. 320 is L.E. $\dots\dots\dots$

(3) If a die is thrown once , then the probability of appearance of an even prime number is

(4) The solution set of the equation : $X^2 + 4 = 0$ in \mathbb{N} is

(5) $3(X^2 y^3)^{\text{zero}} = \dots\dots\dots$ (Where $X y \neq 0$)

3 [a] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] Factorize : (1) $Xy + 5y + 3X + 15$

(2) $* 4X^2 - 20X + 25$

4 [a] If $(\sqrt{3})^{n+2} = 9$, find the value of : n

[b] Factorize : (1) $X^4 + 4y^4$

(2) $* y^2 - 7y - 8$

5 [a] If a card is selected randomly of 30 cards in a box numbered from 1 to 30 , Find the probability of getting :

(1) A card carries a number divisible by 5

(2) A card carries a prime number less than 20

(3) A card carries an even number.

[b] If $X = 3$, $y = \sqrt{2}$, find in the simplest form the value of :

(1) $X^{-2} y^{-4}$

(2) $\left(\frac{X}{y}\right)^{-3}$

9 El-Sharkia Governorate

Directorate of Education
Dep. of Governmental L.Schools



Answer the following questions :

1 Complete each of the following :

(1) If $3^{X-2} = 27$, then $X = \dots\dots\dots$

(2) $\left(\frac{-2}{3}\right)^0 = \dots\dots\dots$

(3) The S.S. of the equation : $X^2 + 9 = 0$ in \mathbb{R} , is

(4) If $6^X = 3$, then $6^{X+1} = \dots\dots\dots$

(5) If the probability that a student succeeds in a subject is 0.8 , then the probability of his failure is

2 Choose the correct answer :

(1) If $\frac{26}{X} + 1 = 14$, then $X = \dots\dots\dots$

(a) 2

(b) 10

(c) 13

(d) 20

- (2) If $3^{2n-5} = 1$, then $2n = \dots\dots\dots$
- (a) 5 (b) -10 (c) 10 (d) zero
- (3) A die is thrown once, then the probability of appearance number 7 is $\dots\dots\dots$
- (a) $\frac{1}{7}$ (b) zero (c) $\frac{1}{6}$ (d) 1
- (4) The value of $(2)^{20} + (2)^{21} = \dots\dots\dots$
- (a) 2^{41} (b) 4^{41} (c) 3×2^{20} (d) 3×2^{21}
- (5) If $(X+3)^{\text{zero}} = 1$, then $X \in \dots\dots\dots$
- (a) 3 (b) $\{-3\}$ (c) $\mathbb{R} - \{3\}$ (d) $\mathbb{R} - \{-3\}$
- (6) * If $X^2 + kX - 21 = (X-3)(X+7)$, then $k = \dots\dots\dots$
- (a) -4 (b) 4 (c) 8 (d) 20

3 [a] Factorize each of the following expressions :

(1) $X^3 + 2X^2 + 4X + 8$

(2) * $25a^4 - 1$

[b] If $\left(\frac{3}{5}\right)^{X-2} = \frac{27}{125}$ Find the value of : X

4 [a] Find in \mathbb{R} the S.S. of the equation : $X(X+4)(2X-1) = 0$

[b] If $\frac{8^X \times 9^X}{18^X} = 64$ Find the value of : X

5 [a] Selecting randomly a card out of 40 similar cards in a box numbered from 1 to 40 Find the probability of getting a card carries :

(1) An even number.

(2) A number is divisible by 3

(3) A prime number less than 20

(4) A number is not divisible by 10

10 El-Dakahlia Governorate

Maths Supervision



Answer the following questions :

1 Complete each of the following :

(1) If $3^{X-1} = 27$, then $X = \dots\dots\dots$

(2) If $(X-5)^0 = 1$, then $X \in \dots\dots\dots$

(3) $a + b = 2(X + y) = 14$, then $a(X + y) + b(X + y) = \dots\dots\dots$

(4) The probability of impossible event = $\dots\dots\dots$

(5) If the perimeter of square X cm., then its area = $\dots\dots\dots$

2 Choose the correct answer :

- (1) If $6^X = 7$, then $6^{X+1} = \dots\dots\dots$
 (a) 8 (b) 13 (c) 36 (d) 42
- (2) If the product of multiplying four by a number equals 48 ,
 then the third of this number = $\dots\dots\dots$
 (a) 4 (b) 8 (c) 12 (d) 16
- (3) The value of $2^5 + (\sqrt[3]{2})^{10} = \dots\dots\dots$
 (a) 2^6 (b) 2^{10} (c) $(\sqrt[3]{2})^{15}$ (d) $(\sqrt[3]{2})^{20}$
- (4) The S.S. of the equation : $X^3 + 9X = 0$ in \mathbb{R} is $\dots\dots\dots$
 (a) $\{0, 3\}$ (b) $\{0\}$ (c) $\{0, 3\}$ (d) $\{0, 3, -3\}$
- (5) If $2^X = 5$, then $8^X = \dots\dots\dots$
 (a) $\frac{5}{8}$ (b) 25 (c) 125 (d) $\frac{64}{125}$
- (6) * If $y^3 - a = (y - 2)(y^2 + 2y + 4)$, then $a = \dots\dots\dots$
 (a) 2 (b) 4 (c) 8 (d) - 8

3 Factorize :

- (1) $X^4 + y^4 - 11X^2Y^2$ (2) $9X^2 - 4a^2 + y^2 + 6Xy$
 (3) $3X^3 - 2X^2 + 12X - 8$ (4) * $25X^2 - 30X + 9$

4 [a] If the length of a rectangle 5 cm. more than its width and its area 36 cm^2

Find its perimeter.

[b] If $(\sqrt{\frac{2}{3}})^X = \frac{4}{9}$ Find the value of : $(\frac{2}{3})^{X-1}$

5 [a] Prove that : $\frac{(27)^{X-1} \times 8^X}{(2\sqrt{3})^{2X} \times (3\sqrt{2})^{2X}} = \frac{1}{27}$

[b] A team plays 30 matches in national league , its drawn probability is 0.3 and its win probability is 0.6 Calculate the number of loss matches.



Answer the following questions :

1 Complete each of the following :

- (1) $4a(X + y) - 3b(X + y) = (X + y)(\dots\dots\dots - \dots\dots\dots)$
- (2) The S.S. of the equation : $X^2 + 3X = 0$ in \mathbb{R} is $\dots\dots\dots$

- (3) If $3^x = 27$, then $x = \dots\dots\dots$
- (4) The probability of impossible event is $\dots\dots\dots$
- (5) If the probability of absent pupils in a school is $\frac{2}{19}$, then the probability of present pupils is $\dots\dots\dots$

2 Choose the correct answer :

- (1) If $(x - 5)^{\text{zero}} = 1$, then $x \in \dots\dots\dots$
- (a) $\mathbb{R} - \{5\}$ (b) $\mathbb{R} - \{-5\}$ (c) $\{5\}$ (d) \mathbb{R}
- (2) The S.S. in \mathbb{R} of the equation : $x^2 + 25 = 0$ is $\dots\dots\dots$
- (a) $\{5\}$ (b) $\{5, -5\}$ (c) \emptyset (d) $\{-5\}$
- (3) If $5^x = 2$, then $5^{x+2} = \dots\dots\dots$
- (a) 25 (b) 2 (c) 50 (d) 100
- (4) A bag contains 20 balls, 8 out of them are white and the rest are black then the probability of drawn ball is black is $\dots\dots\dots$
- (a) 1 (b) 0.6 (c) 0 (d) $\frac{8}{20}$
- (5) Which of the following can be probability of an event $\dots\dots\dots$
- (a) 1.2 (b) $\frac{4}{3}$ (c) -0.2 (d) 37 %
- (6) * If $x^2 - a = (x - 3)(x + 3)$, then $a = \dots\dots\dots$
- (a) 3 (b) -3 (c) 9 (d) -9

- 3 [a] Factorize :** (1) $x^3 - 3x^2 + 6x - 18$ (2) * $3x^3 - 81$

[b] If $\left(\frac{2}{5}\right)^{2x-1} = \frac{8}{125}$ Find the value of : x

- 4 [a]** A positive real number if you add its square to its three times the result will be 28 find the number.

[b] Find in \mathbb{R} the S.S. of : $x^2 - 8x = -15$

- 5 [a]** If a card is chosen randomly from 10 cards numbered from 1 to 10, then the probability of chosen card is :

- (1) Even number. (2) Divisible by 3
- (3) Even prime.

[b] Prove that : $\frac{(27)^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}} = \frac{1}{27}$



Answer the following questions :

1 Choose the correct answer from those given :

(1) $3^{-2} = \dots\dots\dots$

(a) -9

(b) $\frac{1}{9}$

(c) $-\frac{1}{9}$

(d) 9

(2) $\sqrt{100 - 64} = 10 - \dots\dots\dots$

(a) 4

(b) 6

(c) 8

(d) -6

(3) If a coin thrown once , then the probability of appearing tail = $\dots\dots\dots$

(a) 1

(b) 0.3

(c) 0.5

(d) 0

(4) The solution set of the equation : $x^2 + 9 = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) $\{3\}$

(b) $\{-3\}$

(c) \emptyset

(d) $\{3, -3\}$

(5) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

(a) 4^3

(b) 4^4

(c) 4^{12}

(d) 4^{81}

(6) * The expression : $a x^2 - 40 x + 25$ is a perfect square when $a = \dots\dots\dots$

(a) 2

(b) 4

(c) 9

(d) 16

2 Complete each of the following :

(1) If the probability that a pupil succeed is 0.8 , then probability of his failure = $\dots\dots\dots$

(2) If $7^x = 1$, then $x = \dots\dots\dots$

(3) $2 \times 6 - 8 \div 4 = \dots\dots\dots$

(4) If $2^x = 5$, then $2^{-x} = \dots\dots\dots$

(5) If $x - y = 3$ and $x + y = 4$, then $x^2 - y^2 = \dots\dots\dots$

3 [a] Simplify : $\frac{(\sqrt{3})^8 \times (\sqrt{3})^{14}}{(\sqrt{3})^{-4}}$

[b] Find the solution set of the following equation in \mathbb{R} : $x^2 - 8x = -15$

4 [a] Factorize each of the following expressions :

(1) * $x^2 - 4y^2$

(2) $x^4 + 4y^4$

[b] Find the solution set of the following equation in \mathbb{R} : $3^{x-4} = 9$

5 [a] If $a = \sqrt[3]{2}$, $b = \sqrt[3]{3}$, find the numerical value of : $\frac{b^4 - a^4}{b^2 + a^2}$

[b] A box contains 5 white , 2 red , 3 green balls , a ball is drawn randomly from the box
Calculate the probabilities of the following events :

- (1) The ball is white. (2) The ball yellow. (3) The ball is not red.

13 El-Beheira Governorate

General Maths Supervision



Answer the following questions :

1 Choose the correct answer :

(1) If four times a number is 48 , then one third of this number equals

- (a) 4 (b) 8 (c) 12 (d) 16

(2) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

- (a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

(3) If $6^x = 7$, then $6^{x+1} = \dots\dots\dots$

- (a) 8 (b) 13 (c) 36 (d) 42

(4) If 2 is a solution for the equation : $x^2 - 5x + a = 0$, then a =

- (a) -3 (b) -6 (c) 6 (d) 3

(5) If $x(x-2)^2 = 0$, then $x \in \dots\dots\dots$

- (a) {2} (b) {0 , -2} (c) {0} (d) {0 , 2}

(6) * The expression : $x^2 - 3x + c$ can be factorized , then c can be equal to

- (a) 1 (b) 2 (c) 4 (d) 6

2 Complete each of the following :

(1) The simplest form of the expression : $2^{\text{zero}} + 2^{-1} - \left(\frac{-1}{\sqrt{2}}\right)^2 = \dots\dots\dots$

(2) If $x + y = 5$, $a - 2b = 4$, then $a(x + y) - 2b(x + y) = \dots\dots\dots$

(3) If the age of Zyad now is x year , then his age before 3 years was years.

(4) If $x = (\sqrt{2} + 3)^5$, $y = (\sqrt{2} + 3)^{-5}$, then $xy = \dots\dots\dots$

(5) A die is thrown once , then the probability of appearance odd prime number is

3 [a] Find the S.S. of the following equation in \mathbb{R} : $(x-3)(x+1) = 5$

[b] Find the positive real number if we add its square to its three times the result will be 28

4 [a] If $\left(\frac{2}{3}\right)^{x-4} = 2 \frac{1}{4}$, then find the value of : x

[b] Simplify to the simplest form : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

3 [a] Factorize each of the following :

(1) $x^3 - x^2 + x - 1$

(2) $* x^2 - 5xy - 24y^2$

[b] A team plays 30 matches in a general league, its draw probability is 0.3 and its win probability is 0.6

Find : (1) The expected number of draw matches.

(2) The expected number of lose matches.

14 : El-Fayoum Governorate

Directorate of Education
Supervision of Mathematics



Answer the following questions :

1 Choose the correct answer :

(1) If $\frac{a}{b} = 1$, then $4a - 4b = \dots\dots\dots$

(a) 8

(b) 4

(c) 1

(d) 0

(2) If the probability that a pupil succeeds is 0.7, then the probability of his failure is $\dots\dots\dots$

(a) 0.7

(b) 0.07

(c) 0.3

(d) 0.03

(3) If the age of Ahmed now is x years, then the square of his age is $\dots\dots\dots$ years.

(a) x^2

(b) $2x$

(c) $2x^2$

(d) $x + 2$

(4) $(-1)^3 + (-1)^5 = \dots\dots\dots$

(a) 0

(b) -2

(c) 2

(d) 201

(5) $(5a)^0 = \dots\dots\dots$, $a \neq 0$

(a) 5

(b) a

(c) $5a$

(d) 1

(6) $* \text{ If } x - 2y = 3, \quad x^2 - 4y^2 = 21, \text{ then } x + 2y = \dots\dots\dots$

(a) 14

(b) 9

(c) 7

(d) 6

2 Complete each of the following :

(1) $\frac{3}{4} = \dots\dots\dots\%$

(2) If $a = 7^x$, $b = 7^{-x}$, then $a \times b = \dots\dots\dots$

(3) $2^{-3} \times 2^{-2} \div 4^{-3} = \dots\dots\dots$

(4) The solution set of the equation : $x^2 - 6x = 0$ in \mathbb{R} is $\dots\dots\dots$

(5) If a fair coin is tossed once , then the probability of appearance of a head = $\dots\dots\dots$

3 [a] Factorize each of the following completely :

(1) $36 - 60k + 25k^2$

(2) $x^4 + 64$

[b] Find in \mathbb{R} the S.S. of the following equation : $x^2 + x = 6$

4 [a] Simplify to the simplest form : $\frac{(\sqrt{5})^{10} \times (-\sqrt{5})^5}{(\sqrt{5})^{11}}$

[b] A regular die is thrown once Find the probability of the appearance a number :

(1) Even.

(2) Between 0 and 6

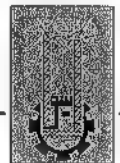
(3) Prime.

5 [a] Find in \mathbb{R} the S.S. of the following equation : $2^{n-3} = \frac{1}{4}$

[b] Simplify to the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then calculate its value at $x = 1$

15 Aswan Governorate

Aswan Educational Directorate
M.M. Yackoub Language Experimental school



Answer the following questions :

1 Complete each of the following :

(1) If $a(x+y) - b(x+y) = 15$ and $x+y = 5$, then $a - b = \dots\dots\dots$

(2) The multiplicative inverse of $\left(-\frac{2}{3}\right)^3$ is $\dots\dots\dots$

(3) $\frac{3}{5} + \frac{2}{5} = \dots\dots\dots \%$

(4) If $3^{x-2} = 1$, then $x = \dots\dots\dots$

(5) $x^2 - x = x (\dots\dots\dots)$

2 Choose the correct answer :

(1) The S.S. of the inequality $x \leq 0$ in \mathbb{N} is $\dots\dots\dots$

(a) $\{0\}$

(b) $\{-1\}$

(c) \emptyset

(d) \mathbb{N}

(2) $\left(\frac{\sqrt{5}}{3}\right)^{-2} = \dots\dots\dots$

(a) $\frac{-9}{5}$

(b) $\frac{-5}{9}$

(c) $\frac{5}{9}$

(d) $\frac{9}{5}$

(3) If $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

- (a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2

(4) The S.S. of the equation : $x(x-2) = 0$ in \mathbb{R} is $\dots\dots\dots$

- (a) $\{0\}$ (b) $\{2\}$ (c) $\{0, 2\}$ (d) $\{0, -2\}$

(5) If the probability that a student succeeds in a subject is 80%
 , then the probability of his failure is $\dots\dots\dots$

- (a) 0.08 (b) 0.02 (c) 0.2 (d) 0.8

(6) * If the expression : $x^2 + 14x + b$ is a perfect square , then $b = \dots\dots\dots$

- (a) 0 (b) 49 (c) ± 9 (d) 7

3 [a] If : $\frac{8^x \times 9^x}{(18)^x} = 64$, find the value of : $(4)^{-x}$

[b] Factorize : (1) $9x^2 - 3x$ (2) * $-9x^2 + 25$

4 [a] A regular die is drawn once , find the probability of the following events :

- (1) Appearance a number divisible by 7
 (2) Appearance a prime number ≤ 4

[b] Find in \mathbb{R} the S.S. of the equation : $x(x-2) - 3(2-x) = 0$

5 [a] Factorize :

- (1) $a^2x - 7a + 3x - 21$ (2) * $3x^2 + 7y - 6$

[b] If $3^x = 27$, $4^{x+y} = 1$, find the value of each of x and y



Some Schools Examinations

1

Cairo Governorate

Ain Shams directorate



Answer the following questions :

1 Complete :

- (1) The simplest form of $\left(\frac{3}{5}\right)^{-2}$ is
- (2) If $2^x + 2^x = 1$, then $x = \dots\dots\dots$
- (3) The S.S. of : $x^2 + 9 = 0$ in \mathbb{R} is
- (4) A die is thrown once, then the probability of appearance of an odd prime number is
- (5) If $x^2 - y^2 = 14$, $x - y = 2$, then $x + y = \dots\dots\dots$

2 Choose the correct answer :

- (1) One third of 3^{15} is
 (a) 3^5 (b) 9^{15} (c) 9^5 (d) 3^{14}
- (2) The S.S. of : $x(x-2) = 0$, in \mathbb{R} is
 (a) $\{0\}$ (b) $\{2\}$ (c) $\{0, 2\}$ (d) $\{0, -2\}$
- (3) If -2 is a solution for the equation : $x^2 - 3x = k$, then $k = \dots\dots\dots$
 (a) -10 (b) ± 10 (c) -2 (d) 10
- (4) If $x^2 + kx + 36$ is a perfect square trinomial, then $k = \dots\dots\dots$
 (a) 12 (b) -12 (c) 0 (d) ± 12
- (5) $3^5 \times (\sqrt{3})^{10} = \dots\dots\dots$
 (a) 3^6 (b) 3^{10} (c) $(\sqrt{3})^{15}$ (d) $(\sqrt{3})^2$

3 [a] Find in \mathbb{R} the S.S. of : $2x^3 = 8x$

[b] Simplify : $\frac{4^{n+1} \times 9^{2-n}}{6^{2n}}$, then find its value at : $n = 1$

4 Factorize each of the following completely :

- (1) $L^4 + 4m^4$ (2) $a^2x + b^2x + a^2y + b^2y$
- (3) $\frac{1}{3}L^3 + 9$ (4) $7a^4 + 23a^2b - 30b^2$

- 5 [a] A rectangle its area is 14 cm^2 and its length is 5 cm. more than its width.

Find its perimeter.

- [b] A numbered card is selected randomly from a set of similar cards numbered from 1 to 30

Find the probability of getting a card carries :

- (1) A multiple of 6 (2) A number is divisible by 25
(3) A positive integer less than 30

2

Cairo Governorate

Red El-Farag Educational Zone
St. Mary's School



Answer the following questions :

- 1 Choose the correct answer :

- (1) The S.S. of the equation : $X^2 - 1 = 8$ in \mathbb{R} is

- (a) \emptyset (b) $\{3\}$ (c) $\{-3\}$ (d) $\{-3, 3\}$

- (2) If $6^X = 7$, then $6^{X+1} = \dots\dots\dots$

- (a) 8 (b) 13 (c) 36 (d) 42

- (3) Let $X^2 + kX + 25$ be a perfect square, then $k = \dots\dots\dots$

- (a) 5 (b) 10 (c) ± 5 (d) ± 10

- (4) The value of the expression : $3^5 + (\sqrt{3})^{10} - 2(3)^5 = \dots\dots\dots$

- (a) zero (b) 3^5 (c) $(\sqrt{3})^5$ (d) $2(3)^5$

- (5) If a die is thrown once, then the probability of appearance 5 on the upper face is

- (a) $\frac{-5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

- 2 Complete :

- (1) If $2^X = 32$, then $X = \dots\dots\dots$

- (2) $4^y + 4^y + 4^y + 4^y = 1$, then $y = \dots\dots\dots$

- (3) If $5^{X-3} = 1$, then $X = \dots\dots\dots$

- (4) $aX + bX + ay + by = (a + b)(\dots\dots\dots + \dots\dots\dots)$

- (5) If $X = (\sqrt{5} + 6)^9$, $y = (\sqrt{5} + 6)^{-9}$, then $XY = \dots\dots\dots$

3 [a] Factorize : $3aX - a - 6bX + 2b$

[b] Factorize : $X^4 + X^2Y^2 + 25Y^4$

4 [a] Find in \mathbb{R} the S.S. of the equation : $\left(\frac{5}{3}\right)^{X+2} = \frac{27}{125}$

[b] The ratio between two positive numbers is 2 : 3 and their product is more than twice the greater by 12 , find the two numbers.

5 [a] Prove that : $\frac{(27)^{X-1} \times (8)^X}{(2\sqrt[3]{2})^{2X} \times (3\sqrt[3]{3})^{2X}} = \frac{1}{27}$

[b] A bag contains balls labeled by the numbers from 1 to 24 , if a ball is drawn at random.

Find the probability of each of the following :

(1) The drawn ball carries a number divisible by 5

(2) The drawn ball carries a perfect square number.

Additional question

[a] Choose the correct answer :

(1) If $X^3 - Y^3 = 24$, $X^2 + XY + Y^2 = 8$, then $X - Y = \dots\dots\dots$

(a) 4 (b) 6 (c) 3 (d) 12

(2) If $(X + 8)$ is a factor of the expression : $X^2 + 6X - 16$, then the other factor is

(a) $X - 2$ (b) $X - 4$ (c) $X + 2$ (d) $X + 4$

[b] Factorize each of the following :

(1) $X^2 - 5X - 36$

(2) $4X^2 - 25Y^2$

3

Cairo Governorate

East Nasr City Educational Zone
Mathematics Inspection



Answer the following questions :

1 Choose the correct answer from the given ones :

(1) $(X - 2)(X^2 + 2X + 4) = \dots\dots\dots$

(a) $X^3 + 8$ (b) $X^3 - 8$ (c) $X^3 + 4$ (d) $X^3 + 2$

(2) If a die is thrown once , then the probability that the number 5 appears is ..

- (a) $\frac{5}{6}$ (b) $\frac{1}{2}$ (c) $\frac{1}{6}$ (d) $\frac{0}{6}$

(3) If $7^{X-3} = 5^{X-3}$, then $X = \dots\dots\dots$

- (a) 5 (b) 7 (c) 3 (d) 0

(4) $4 \times 15 \div 12 - 5 = \dots\dots\dots$

- (a) -2 (b) 0 (c) 2 (d) 1

(5) $X^4 + 4$ can be factorize by completing square by adding

- (a) $4X$ (b) $-X^2$ (c) $\pm 4X^2$ (d) $-2X^2$

2 Complete :

(1) $\left(\frac{3}{5}\right)^X = \frac{27}{125}$, then $X = \dots\dots\dots$

(2) The solution set of the equation : $X^2 + 9 = 0$ in \mathbb{R} is

(3) If the probability that a student failed is 7 % , then the probability that this student succeeded is

(4) If $3^X = 81$, then $X = \dots\dots\dots$

(5) If $a^2 + 2ab + b^2 = 25$, then $(a + b) = \dots\dots\dots$

3 [a] Factorize :

- (1) $aX + bX + ay + by$ (2) $4X^4 + 1$

[b] Find in \mathbb{Q} the solution set of :

- (1) $(X^2 + 3)(X^3 + 1) = 0$ (2) $4X^2 - 25 = 0$

4 [a] If $\frac{8^X \times 9^X}{18^X} = 64$, find : X

[b] A rectangle its length exceeds its width by 5 cm. and its area is 14 cm^2 . Find its dimensions.

5 [a] A box contains a similar balls , 8 white balls , 5 red balls and 7 black balls , if we choose a ball , then find the probability that the ball is :

- (1) White. (2) Black or red.

[b] A rational number , if subtracted from it double its multiplicative inverse the result equals one. Find this number.

Additional questions

[a] Complete each of the following :

(1) $5x^2 + x - 6 = (\dots\dots\dots + \dots\dots\dots)(x - \dots\dots\dots)$

(2) The expression : $x^2 - kx + 4$ is a perfect square , if $k = \dots\dots\dots$

[b] Factorize each of the following :

(1) $x^2 + 7x + 12$

(2) $6x^2 - 7x - 3$

4

Giza Governorate

Omrania Directorate
ELSadat Governmental language School



Answer the following questions :

1 Complete each of the following :

(1) The simplest form of $\left(\frac{2}{3}\right)^2$ is

(2) The probability of the impossible event =

(3) If $2^x = 5$, then $2^{x+1} = \dots\dots\dots$

(4) The age of a man now x years , then his age 7 years ago is years.

(5) $x(a + b) + y(a + b) = (a + b)(\dots\dots\dots)$

2 Choose the correct answer :

(1) The solution set of the equation : $x^2 + 25 = 0$ in \mathbb{R} is

(a) $\{5, -5\}$

(b) $\{5\}$

(c) $\{-5\}$

(d) \emptyset

(2) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

(a) 4^3

(b) 4^4

(c) 4^{12}

(d) 4^{81}

(3) If a die is thrown once , then the probability of appearance number 7 is

(a) zero

(b) 0.7

(c) 0.6

(d) 1

(4) $(5^2)^3 = \dots\dots\dots$

(a) 5^{23}

(b) 5^5

(c) 5^6

(d) 5

(5) If $(3)^{x+4} = 1$, then $x = \dots\dots\dots$

(a) 4

(b) -4

(c) 5

(d) 3

3 Factorize each of the following :

(1) $a^2 X - 4a + 3X - 12$

(2) $X^4 + 4$

4 [a] Find in \mathbb{R} the S.S. if the following equation : $X^2 - 5X + 6 = 0$

[b] Simplify : $\frac{2^X \times 4^{X+1}}{8^X}$

5 [a] Find the value of X if : $2^{X-2} = 16$

[b] A box contains 3 red balls , 4 yellow balls and 5 green balls.

A ball is drawn randomly from the box.

Find the probability of the drawn ball is :

(1) Yellow.

(2) Green.

(3) Not red.

Additional question

[a] Complete the following :

(1) If $X^2 + aX - 13 = (X + 1)(X - 13)$, then $a = \dots\dots\dots$

(2) If $k \in \mathbb{Z}$, $X^2 + kX - 3$ can be factorized , then $k = \dots\dots\dots$

[b] The area of a rectangle is $(X^2 + 8X + 15) \text{ cm}^2$ and its width is $(X + 3) \text{ cm}$.

Find its length in terms of X , then find its perimeter in terms of X

5 Giza Governorate

Dokki District
Modern Nanner Language School



Answer the following questions :

1 Complete the following :

(1) If $a(X + y) - b(X + y) = 15$, $X + y = 5$, then $a - b = \dots\dots\dots$

(2) If $X^2 - y^2 = 35$, $X - y = 7$, then $X + y = \dots\dots\dots$

(3) The number $(\sqrt{2})^{-3}$ in the simplest form is $\dots\dots\dots$

(4) If $3^{X-2} = 9$, then $X = \dots\dots\dots$

(5) A bag contains 10 cards numbered from 1 to 10 , the probability of choosing a card that carries a prime number is $\dots\dots\dots$

2 Choose the correct answer :

- (1) The expression : $X(y + 3) + z(y + 3) = \dots\dots\dots$
 (a) $X + y + z + 6$ (b) $(X + z)(y + 3)$ (c) $(X + z)(y + 3)^2$ (d) $(X + z) \times 2(y + 3)$
- (2) If $3^X + 3^X + 3^X = 1$, then $X = \dots\dots\dots$
 (a) -1 (b) 0 (c) 1 (d) 2
- (3) If $3^X = 5$, then $(27)^X = \dots\dots\dots$
 (a) 9 (b) 25 (c) 125 (d) 729
- (4) $2^{12} \times 3^{12} = \dots\dots\dots$
 (a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}
- (5) If a die is thrown once, then the probability that 5 appears is $\dots\dots\dots$
 (a) $-\frac{5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

3 [a] Factorize completely :

- (1) $LX - 7L + 3X - 21$ (2) $X^4 - X^2 - 5X + 5$

[b] Using factorization to find the value of : $36^2 - 36 \times 16$

4 [a] Simplify : $\frac{4^m \times 6^{2m}}{2^{4m} \times 3^{2m}}$

[b] If a number X is decreased by twice its multiplicative inverse, the result is 1 Find : X

5 [a] Find the value of X if : $3^{2X-3} = 243$

[b] A bag contains 20 balls numbered from 1 to 20, if one ball is drawn at random, then find the probability that :

- (1) The number is a multiple of 4 (2) The number is less than or equal 7

Additional question

[a] Choose the correct answer :

- (1) If $X^3 + y^3 = 9$, $2X + 2y = 6$, then $X^2 - Xy + y^2 = \dots\dots\dots$
 (a) 3 (b) 9 (c) 27 (d) 54
- (2) The number which can be added to the expression : $2X^2 + 5X - 10$ to be factorized is $\dots\dots\dots$
 (a) -1 (b) -2 (c) -3 (d) -4

[b] Factorize each of the following :

- (1) $2(X^2 - 2) - 7X$ (2) $X^2 - 25$

6

Alexandria Governorate

Middle Educational Zone
Mathematics Inspection

Answer the following questions :

1 Choose the correct answer :

(1) The S.S. of the equation : $X(X - 5) = 0$ in \mathbb{R} is

- (a) $\{0\}$ (b) $\{5\}$ (c) $\{0, 5\}$ (d) $\{0, -5\}$

(2) If $5^{X-4} = 3^{X-4}$, then $X = \dots\dots\dots$

- (a) 4 (b) -4 (c) zero (d) 35

(3) The probability of a certain event =

- (a) zero (b) 1 (c) -1 (d) -2

(4) If $\left(\frac{3}{5}\right)^X = \frac{27}{125}$, then $X = \dots\dots\dots$

- (a) -3 (b) 3 (c) $\frac{3}{5}$ (d) zero

(5) Which of the following may be equal a probability of an event ?

- (a) $\frac{-3}{4}$ (b) 1.7 (c) $\frac{7}{5}$ (d) 60 %

2 Complete each of the following :

(1) If $Xy^{-1} = \frac{1}{3}$, then $\frac{X}{y} = \dots\dots\dots$ (2) If $5^X = 3$, then $5^{X+1} = \dots\dots\dots$

(3) If the probability that a student succeeds in an exam is 0.8, then the probability of his failure is

(4) If $X \in \mathbb{R}$, then the S.S. of equation : $X^2 + 49 = 0$ is(5) The age of a man now is X years, then his age after 7 years is years.

3 [a] Factorize each of the following :

(1) $Xy + 5y + 3X + 15$

(2) $X^4 + 4y^4$

[b] If a real number is added to its square the result will be 12, find this number.

4 [a] Find in \mathbb{R} the S.S. of the equation : $X^3 - 25X = 0$ [b] Simplify to the simplest form : $\frac{3^X \times 6^X}{18^X}$

5 [a] A box contains 5 blue balls, 7 red balls and 8 green balls.

A ball is drawn randomly from the box.

Find the probability of getting :

- (1) Red ball. (2) Non-blue ball. (3) White ball.

[b] If $3^{x-4} = 243$

Find the value of : x

Additional question

[a] Choose the correct answer :

(1) If $l + m = 9$, $m - l = -6$, then $l^2 - m^2 = \dots\dots\dots$

- (a) 54 (b) 14 (c) - 54 (d) - 14

(2) If $x^2 - 2xy + y^2 = 36$, then $x - y = \dots\dots\dots$

- (a) 18 (b) - 6 (c) 6 (d) ± 6

[b] Factorize completely :

(1) $2x^3 + 16$

(2) $7x^4 + 23x^2y - 30y^2$

7 El-Kalyoubia Governorate

Directorat of Education
Mathematics Inspection



Answer the following questions :

1 Choose the correct answer :

(1) If $x^3 \times y^{-3} = 8$, then $\frac{x}{y} = \dots\dots\dots$

- (a) $\frac{8}{3}$ (b) 2 (c) $\frac{1}{2}$ (d) 512

(2) The S.S. of the equation : $x(x - 2) = 0$ in \mathbb{R} is $\dots\dots\dots$

- (a) $\{0\}$ (b) $\{2\}$ (c) $\{0, 2\}$ (d) $\{0, -2\}$

(3) If $\left(\frac{5}{3}\right)^x = \frac{27}{125}$, then $x = \dots\dots\dots$

- (a) - 5 (b) - 3 (c) 5 (d) 3

(4) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

- (a) 4^4 (b) 4^{12} (c) 16^3 (d) 16^{12}

(5) $2^2 \times 5^3 = \dots\dots\dots$

- (a) $\frac{1}{2} \times 10^3$ (b) 10^3 (c) 10^5 (d) 10^6

2 Complete each of the following :

- (1) The S.S. of the equation : $x^2 - 3 = 0$ in \mathbb{R} is
- (2) The S.S. of the equation : $(x^2 + 4)(x^3 + 1) = 0$ in \mathbb{R} is
- (3) $(-5)^3 = \dots\dots\dots$
- (4) If $2^x = 3$, then $8^x = \dots\dots\dots$
- (5) Letters of the word (Elkliobia) are written in cards. If a card is drawn ,
then the probability that chosen card carries the latter "i" =

3 [a] Factorize the following expression : (1) $x^2 - 5x$ (2) $ax - 7a + 3x - 21$

[b] If $a = \sqrt{10}$, $b = 1$ Find the numerical value of : $a^4 + b^{10}$

4 [a] Find the S.S. of the equation : $(2x - 3)(x + 1) = 0$, $x \in \mathbb{R}$

[b] Simplify : $\frac{(\sqrt{2})^5 \times 3^6}{3^4 \times (\sqrt{2})^3}$ to the simplest form.

5 [a] The length of a rectangle exceeds its width by 1 cm. , if its perimeter = 14 cm.

Calculate its area.

[b] A regular die is drawn once. Find the probability of getting :

- (1) A number divisible by 8
- (2) A prime number less than 4

Additional question

[a] Complete each of the following :

- (1) If $x^2 - k + 10 = (x - 3)(x + 3)$, then $k = \dots\dots\dots$
- (2) If $x = 3$, $y = 8$, then $x^2 - 2xy + y^2 = \dots\dots\dots$

[b] Use factorization to get the value of : $(80)^2 + 40 \times 80 + 400$



Answer the following questions :

1 Choose the correct answer :

(1) If $(x - 2)^0 = 1$, then $x \in \dots\dots\dots$

- (a) $\{2\}$
- (b) \mathbb{R}
- (c) $\mathbb{R} - \{2\}$
- (d) $\mathbb{R} - \{-2\}$

If $5^X = 4$, then $5^{X-1} = \dots$

0.8

1.25

0.125

0.08

(3) The S.S. of the equation : $X^2 + 1 = 0$ in \mathbb{R} is

$\{-1\}$

$\{1\}$

$\{1, -1\}$

\emptyset

(4) The probability of impossible event is

\emptyset

1

zero

1

(5) The value of $(\sqrt{X})^{16} = X$

(a) 16

(b) 8

(c) 4

(d) 32

2 Complete :

(1) $5^{X+2} = \dots \times 25$

(2) If $X^3 y^{-3} = 8$ then $\frac{y}{X} = \dots$

(3) If a die is thrown once, then the probability of appearance 5 is

(4) $a^7 + 1 = a^7 (\dots + \dots)$

(5) $3^X \times 3^X \times 3^X = (27) \dots$

3 [a] Factorize each of the following :

(1) $a^2 + a b + a + b$

(2) $X^4 + 4 y^4$

[b] Find in \mathbb{R} the S.S. of the equation : $(2X + 1)(X - 3) = 0$

[a] Find the value of X if : $3^{X-2} = 27$

[b] Find in the simplest form : $\frac{4^{X+1} \times 3^{2X-3}}{6^{2X}}$

[a] If $2^{X-3} = 1$ Find the value of : X^2

[b] If a card is selected randomly of 30 cards in a box numbered from 1 to 30

Find the probability of getting :

(1) A card carries a number divisible by 5

(2) A card carries a prime number less than 20

(3) A card carries an even number.

Additional question

[a] Choose the correct answer :

- (1) If $(X + 1)^2$ is a factor of the expression $(X^2 - 1)^2$, then the other factor is ...
 (a) $X - 1$ (b) $X^2 - 1$ (c) $X^2 + 1$ (d) $(X - 1)^2$
- (2) If $X = 7$, $y = 3$, then $X^2 + 2Xy + y^2 = \dots\dots\dots$
 (a) 10 (b) 4 (c) 100 (d) 16

[b] Factorize each of the following :

- (1) $3X^2 + 10X + 8$ (2) $\frac{1}{3}X^3 - 9$

9

El-Gharbia Governorate

Official Language Schools
The Central Maths Supervision



Answer the following questions :

1 Choose the correct answer :

- (1) If a die is thrown once, then the probability of appearance odd prime number is
 (a) 0 (b) $\frac{1}{6}$ (c) $\frac{1}{3}$ (d) $\frac{1}{2}$
- (2) If $7^X = 49$, then $X = \dots\dots\dots$
 (a) 0 (b) -2 (c) -7 (d) 2
- (3) Which of the following may be equal the probability of an event ?
 (a) -0.73 (b) 1.23 (c) 79% (d) $\frac{4}{3}$
- (4) $3^{10} + 3^{10} + 3^{10} = \dots\dots\dots$
 (a) 3^{30} (b) 3^{1000} (c) 3^{11} (d) 3^{12}
- (5) One sixth of the number : $2^{12} \times 3^{12}$ is
 (a) 6^2 (b) 6^4 (c) 6^{11} (d) 6^{23}

2 Complete :

- (1) 1, 1, 2, 3, 5, 8, , (in the same pattern)
- (2) If $3^X \times 2^{-X} = 1.5$, then $X = \dots\dots\dots$

(3) The S.S. of the equation : $(X - 1)^2 = 0$ in \mathbb{R} is

(4) If $6^X = 11$, then $6^{X+1} =$

(5) The probability of the impossible event =

3 [a] Factorize each of the following :

(1) $y^3 + y^2 + 9y + 9$

(2) $4X^4 + y^4$

[b] Find in the simplest form : $(\sqrt{3} + 2)^{11} (\sqrt{3} - 2)^{11}$

4 [a] If $\frac{8^X \times 9^X}{18^X} = 64$ Find the value of : $(4)^{-X}$

[b] What is the positive real number if we add its square to three times it the result will be 28 ?

5 [a] The set $\{2, 3, 5\}$ is used to write a number which consists of two different digits

(1) Write the sample space.

(2) Find the probability of the following events :

First : The units digit is an even number.

Second : The sum of the two digits greater than 5

[b] Find the value of X if : $7^{X-2} = 1$, where $X \in \mathbb{R}$

Additional question

[a] Complete the following :

(1) If $X - y = 3$, $X - 2y = 7$, then $X^2 - 3Xy + 2y^2 =$

(2) $l^2 - m^2 = l + m$, then $l - m =$

[b] Use factorization to get the value of : $(73)^2 - (27)^2$

10 El-Dakahlia Governorate

Maths Supervision



Answer the following questions :

1 Complete each of the following :

(1) If $X^3 y^{-3} = 8$, then $\frac{y}{X} =$

(2) If $X^2 + y^2 = 26$, $X + y = 6$, then $Xy =$

$$3^{x-1} + 3^{x-1} + 3^{x-1} = 3$$

∴ If $2^x = \sqrt{3}$, then $16^x = \dots\dots\dots$

If $(a + 2b) = 5$ $(a - 2b) = 10$, then $a^2 - 4b^2 = \dots\dots\dots$

Choose the correct answer :

∴ If $3^x = 5$, then $3^{x+2} = \dots\dots\dots$

- (a) 10 (b) 15 (c) 45 (d) $\frac{5}{4}$

(2) The S.S. of the equation : $x^2 + 9 = 0$ in \mathbb{R} is $\dots\dots\dots$

- (a) $\{0\}$ (b) $\{3\}$ (c) $\{3, -3\}$ (d) \emptyset

(3) If $x + \frac{1}{x} = 3$, then $x^2 + \frac{1}{x^2} = \dots\dots\dots$

- (a) 9 (b) 11 (c) 7 (d) 1

If the probability that a student succeeds in an exam is 0.8, then the probability of his failure is $\dots\dots\dots$

- (a) $\frac{1}{5}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{2}{3}$

(5) If $x + 2y = 7$, $a - b = 3$, then $b(x + 2y) - a(x + 2y) = \dots\dots\dots$

- (a) 10 (b) 21 (c) -21 (d) -10

Factorize :

(1) $4x^4 + 25y^4 - 29x^2y^2$ (2) $x^3 + 2x^2 - 4x - 8$ (3) $x^4 + 64$

[a] Simplify : $\frac{(9)^{x-1} \times (4)^{x+2}}{(6)^{2x}}$

[b] Find in \mathbb{R} the S.S. of the equation : $x - \frac{3}{x} = 2$

[a] If $\left(\frac{3}{5}\right)^{x-2} = \frac{125}{27}$ Find the value of : x

[b] A box contains 24 identical cards numbered from 1 to 24, a ball chosen randomly

Find the probability that :

- (1) The chosen card carries number divisible by 6
(2) The chosen card carries a prime number.

11 Port Said Governorate

North Administration
Gov. School Directory

Answer the following questions :

Complete each of the following :

(1) If $X(X-2) = 0$, then $X = 0$ or $X = \dots\dots\dots$

(2) The solution set of : $X^2 + 4 = 0$ in \mathbb{N} is $\dots\dots\dots$

(3) $a(X+y) + b(X+y) = (X+y) = (\dots\dots\dots + \dots\dots\dots)$

(4) The letters of the word (Egypt) are written in cards , if a card is drawn at random , then the probability that chosen card carries the letter "E" is $\dots\dots\dots$

(5) $(\sqrt{3} + \sqrt{2})^9 (\sqrt{3} - \sqrt{2})^9 = \dots\dots\dots$

Choose the correct answer :

(1) $3^3 + 3^3 + 3^3 = \dots\dots\dots$

(a) 3^3

(b) 3^4

(c) 3^9

(d) 4^{27}

(2) The probability of impossible event = $\dots\dots\dots$

(a) 1

(b) 2

(c) 0

(d) $\frac{1}{2}$

(3) $\left(\frac{\sqrt{5}}{3}\right)^{-2} = \dots\dots\dots$

(a) $\frac{9}{5}$

(b) $\frac{-9}{5}$

(c) $\frac{-5}{9}$

(d) $\frac{5}{9}$

(4) If $(X-5)^{\text{zero}} = 1$, then $X \in \dots\dots\dots$

(a) \mathbb{R}

(b) $\mathbb{R} - \{5\}$

(c) $\mathbb{R} - \{-5\}$

(d) $\{5\}$

(5) If $5X = 20$, then $X = \dots\dots\dots$

(a) 4

(b) 8

(c) 15

(d) 20

 [a] Factorize the following expression : $aX + bX + aY + bY$

[b] Find in \mathbb{R} the S.S. of the equation : $X^2 + 5X + 6 = 0$

 [a] If $3^{X-1} = 9$, then find the value of : X

[b] Simplify : $\frac{4^X \times 2^{X+1}}{8^X}$

- 5 A bag contains 5 red balls, 3 green balls and 2 yellow balls. One ball is chosen at random, find the probability that the chosen ball is :

(1) Yellow. (2) Green. (3) Not red.

Additional question

[a] Choose the correct answer :

(1) If $x^2 + a = (x + 3)(x - 3)$, then $a = \dots\dots\dots$

(a) 6 (b) 9 (c) -9 (d) -6

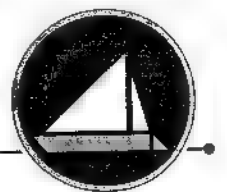
(2) The value of m which makes the expression : $mx^2 + 14x + 1$ a perfect square is $\dots\dots\dots$

(a) 7 (b) 14 (c) 49 (d) 16

[b] Factorize each of the following : (1) $\frac{1}{4}a^2 - 2a + 4$ (2) $2 - 2m^3$

12 Damietta Governorate

Damietta Inspection of Mathematics
Experimental at Language Schools



Answer the following questions :

1 Choose the correct answer :

(1) The probability of an impossible event = $\dots\dots\dots$

(a) 2 (b) -1 (c) 1 (d) zero

(2) $x^4 + 4 = (x^2 + 2)^2 \dots\dots\dots$

(a) $+2x^2$ (b) $-2x^2$ (c) $-4x^2$ (d) $+4x^2$

(3) A bird can travel 8 km. in 15 minutes, at this rate the bird can travel $\dots\dots\dots$ km. in 1 hour.

(a) 32 (b) 16 (c) 120 (d) 60

(4) If $(x - 5)^0 = 1$, then $x \in \dots\dots\dots$

(a) \mathbb{R} (b) $\mathbb{R} - \{5\}$ (c) $\mathbb{R} - \{-5\}$ (d) 5

(5) The solution set of the equation : $x^2 + 25 = 0$ in \mathbb{R} is $\dots\dots\dots$

(a) $\{5\}$ (b) $\{-5\}$ (c) $\{5, -5\}$ (d) \emptyset

2 Complete :

(1) 25% of L.E. 320 is L.E. $\dots\dots\dots$

(2) If a die is thrown once, then the probability of appearance of an even prime number $\dots\dots\dots$

(3) If $5^{x-2} = 1$, then $x = \dots\dots\dots$

4) $\left(\frac{\sqrt{2}}{\sqrt{3}}\right)^4 = \left(\frac{\dots\dots\dots}{\dots\dots\dots}\right)^2$

(5) If $4a + 4b = 32$, then $3a + 3b = \dots\dots\dots$

3 [a] Factorize each of the following :

(1) $x^4 + 4y^4$

(2) $3ax - a + 6bx - 2b$

[b] Simplify to the simplest form : $\frac{9^x \times 4^x}{6^{2x}}$

4 [a] If $3^{x-1} = \frac{1}{27}$ Find the value of : x

[b] Simplify : $\frac{(\sqrt{5})^{x+2} \times (\sqrt{5})^{3x}}{(\sqrt{5})^{2x}}$, then find the value when $x = 1$

5 [a] Find the solution set of the equation in \mathbb{R} : $x^2 - x = 12$

[b] A box contains 7 red balls, 5 blue balls and 3 green balls, one is chosen randomly.

Find the probability of the chosen ball is :

(1) Green.

(2) Yellow.

(3) Not blue.

Additional question

[a] Complete :

(1) If $x + y = 5$, $x^2 - xy + y^2 = 7$, then $x^3 + y^3 = \dots\dots\dots$

(2) $(17)^2 + 2 \times 17 \times 3 + 3^2 = \dots\dots\dots$

[b] Factorize each of the following perfectly :

(1) $(x + 4)^2 - 36$

(2) $2y^4 + 3y^2 - 5$

13 El-Fayoum Governorate

Directorate of Education
Supervision of Mathematics



Answer the following questions :

1 Choose the correct answer :

(1) $(3)^{-2} = \dots\dots\dots$

(a) -9

(b) $-\frac{1}{9}$

(c) $\frac{1}{9}$

(d) 9

(2) If x is an even natural number, then the next odd natural number directly is $\dots\dots\dots$

(a) $x + 1$

(b) $x + 2$

(c) $2x + 1$

(d) $2x$

- (3) The S.S. of : $X(X-2) = 0$ in \mathbb{R} is
 (a) $\{2\}$ (b) $\{0, -2\}$ (c) $\{0, 2\}$ (d) $\{0\}$
- (4) If $\frac{X-5}{X-7} \in \mathbb{Q}$, then $X \neq$
 (a) 5 (b) -5 (c) 7 (d) -7
- (5) $5^2 + 5^2 =$
 (a) 10^2 (b) 10^4 (c) 5^4 (d) 50

Complete each of the following :

- (1) $(5a)^0 =$ where $a \neq 0$
 (2) The probability of the impossible event =
 (3) If $3^{n-2} = 81$, then $n =$ (4) $8 + 2 \times 6 \div 4 =$
 (5) For every event A, we find that : $0 \leq P(A) \leq$

[a] Factorize each of the following completely : (1) $Xy + 5y + 7X + 35$ (2) $X^4 + 4$

[b] Find in \mathbb{R} the S.S. of the following equation : $X^2 - 6X = 0$

[a] If $a = \sqrt{2}$, $b = \sqrt{3}$

find (by steps) the numerical value of : $\frac{b^2 - a^4}{b^2 + a^2}$

[b] A card is selected randomly from a set of similar cards numbered from 1 to 10

find the probability of getting a card that carries :

- (1) An even number. (2) A number divisible by 7
 (3) A number less than or equal to 10

[a] Find in \mathbb{R} the S.S. of the following equation : $2^{X^2-9} = 1$

[b] Simplify to the simplest form : $\frac{9^X \times 3^{X+2}}{(27)^X}$

Additional question

[a] Choose the correct answer :

- (1) The expression : $X^2 - 3X + c$ can be factorized when $c =$
 (a) 1 (b) 2 (c) 4 (d) 6
- (2) If the expression : $c + 3X + \frac{1}{4}$ is a perfect square, then $c =$
 (a) X^2 (b) $\frac{9}{4}X^2$ (c) $9X^2$ (d) $4X^2$

[b] Factorize each of the following :

- (1) $X^2 - 4X - 3(X-2)$ (2) $l^3 - \frac{1}{125}$

1 Complete :

(5) The S.S. of : $x(x-1) = 0$ in \mathbb{R} is

(d) 4^{81}

73

5 [a] If $3^x = 27$, $4^{x+y} = 1$ Find the value of : x and y

[b] A bag contains 15 balls numbered from 1 to 15 , one ball is chosen randomly.

Find : ① The probability that the number on the chosen ball is divisible by 3

② The probability that the number on the chosen ball is even number.

③ The probability that the number on the chosen ball is prime number.

Additional question

[a] Complete :

① $5x^2 - 3xy - \dots = (x - y) (\dots + \dots)$

② $\dots - 64x^2 = (4 - \dots) (4 + \dots)$

[b] The area of a square is $(9x^2 + 30x + m)$ cm². Find the value of m (given that the side length of the square is a rational number) , then find its perimeter when $x = 2$

15

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General Mathematics Supervision



Answer the following questions :

1 Choose the correct answer :

① $(x + 3)^2 = \dots$

(a) $x^2 + 9$

(b) $x^2 - 9$

(c) $x^2 + 6x + 9$

(d) $x^2 - 6x + 9$

② If $\left(\frac{5}{3}\right)^x = \frac{27}{125}$, then $x = \dots$

(a) -5

(b) -3

(c) 2

(d) 5

③ In a mixed school there are 320 students , if the probability that the ideal student is a boy equals 0.6 , then the number of girls of the school equals girls.

(a) 256

(b) 192

(c) 128

(d) 196

④ If $a + b = 5$, $a - b = 4$, then $b^2 - a^2 = \dots$

(a) -20

(b) -1

(c) 9

(d) 20

⑤ $(x + 1)^2 = 1$, then $x \in \dots$

(a) $\{0, 2\}$

(b) $\{0, -2\}$

(c) $\{0\}$

(d) \emptyset

2 Complete the following :

- (1) If the probability that a student succeeds in an exam is 0.85 , then the probability of his failure equals
- (2) The greater number of $(-2)^{24}$ and $(-2)^{25}$ is
- (3) If $2^X = 5$, then $2^{X+1} = \dots\dots\dots$
- (4) $X(a+b) - y(a+b) = (a+b) \dots\dots\dots$
- (5) If four times a number is 48 , then one third of this number is

3 [a] Factorize each of the following completely :

(1) $aX - 4a + 3X - 12$

(2) $a^4 + 4b^4$

[b] Find in \mathbb{R} the S.S. of the equation : $2X^3 = 18X$

4 [a] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] If $(\sqrt{3})^{n+2} = 9$

Find the value of : n

5 [a] Find the positive real number if we add its square to its three times the result will be 28

[b] One card is selected randomly from 8 cards numbered from 1 to 8

, find the probability of the following events :

- (1) Getting a number divisible by 3
- (2) Getting a number greater than or equal to 6
- (3) Getting a prime number.

Additional question

[a] Choose the correct answer :

(1) If $b - a = 6$, then $a^2 - 2ab + b^2 = \dots\dots\dots$

(a) - 36

(b) 36

(c) ± 36

(d) - 12

(2) If $4X^2 - y^2 = 32$, $2X + y = 8$, then $4X - 2y = \dots\dots\dots$

(a) 4

(b) 6

(c) 16

(d) 8

[b] Factorize each of the following :

(1) $4X(3X + 7y) - 5y^2$

(2) $\frac{1}{8}a^3 - 8b^3$